

Pacific Salmon Commission



2016/2017

Thirty-Second Annual
Report

Pacific Salmon Commission

**Established by Treaty between Canada and
the United States**

March 18, 1985

for the

**conservation, management and
optimum production of
Pacific salmon**

Thirty-Second Annual Report 2016/2017

**Vancouver, B.C.
Canada**

November 2017



PACIFIC SALMON COMMISSION

ESTABLISHED BY TREATY BETWEEN CANADA
AND THE UNITED STATES OF AMERICA
MARCH 18, 1985

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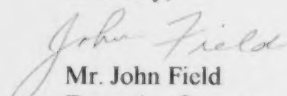
Letter of Transmittal

In compliance with Article II, Paragraph 14 of the Treaty between the Government of Canada and the Government of the United States of America concerning Pacific salmon (the Treaty), it is my pleasure as Executive Secretary of the Pacific Salmon Commission to present my compliments to the Parties and to transmit the Thirty-Second Annual Report of the Commission.

This report summarizes the activities of the Commission for the fiscal year April 1, 2016 to March 31, 2017. It reports on the results of the 2016 fishing season and on meetings of the Commission and its subsidiary bodies. Also included are the annual reports of the Northern and Southern Fund Committees, and an independent auditor's report on financial activities of the Commission during the fiscal year April 1, 2016 to March 31, 2017.

Additional details about the Commission's activities and the Treaty are available at www.psc.org.

Sincerely,


Mr. John Field
Executive Secretary

PACIFIC SALMON COMMISSION

OFFICERS for 2016/2017

Chair

Ms. Rebecca Reid

Vice-Chair

Mr. Charles Swanton

COMMISSIONERS

Canada

Mr. John McCulloch
Mr. Murray Ned
Mr. Bob Rezansoff
Dr. Brian Assu
Ms. Susan Farlinger
Dr. Brian E. Riddell
Mr. Paul Sprout

United States

Mr. Phil Anderson
Ms. Donna Darm
Mr. McCoy Oatman
Mr. W. Ron Allen
Mr. William F. Auger
Mr. Rick Klumph

SECRETARIAT STAFF

Executive Secretary
Administrative Officer
Chief Biologist

Mr. John Field
Ms. Ilinca Manisali
Mr. Mike Lapointe

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INTRODUCTION

Since the early 20th century, Canada and the United States have discussed and collaborated on Pacific salmon conservation and management. Interception of Pacific salmon bound for rivers of one country in fisheries of the other has been a particularly important issue over the years. Scientific research identified a number of intercepting fisheries on species and stocks originating from Alaska, British Columbia, Washington, Oregon and Idaho. This research indicated that Alaskan fishers were catching some of the salmon bound for British Columbia, Idaho, Oregon and Washington. Canadian fishers off the West Coast of Vancouver Island were capturing some of the salmon bound for rivers of Washington and Oregon, while fishers in northern British Columbia were intercepting certain fish returning to Alaska, Washington, Oregon and Idaho. U.S. fishers were catching Fraser River salmon as they traveled through the Strait of Juan de Fuca and the San Juan Islands towards the Fraser River.

Cooperative management of stocks subject to interception became a matter of common concern to Canada and the United States, and governments desired a mechanism to enable each country to reap the benefits of its respective management and enhancement efforts. That mechanism is now provided through the Treaty Between the Government of Canada and the Government of the United States of America Concerning Pacific Salmon (hereafter the "Pacific Salmon Treaty" or "the Treaty"), which entered into force upon the exchange of instruments of ratification by the President of the United States of America and the Prime Minister of Canada on March 18, 1985.

The treaty, *inter alia*, established a) a bilateral fishery management organization known as the Pacific Salmon Commission (the Commission), and b) bilateral fishery management regimes for conservation and harvest sharing of salmon stocks. Each country (Party) retains jurisdictional management authority but must manage its fisheries in a manner consistent with the provisions of the Treaty. The Treaty is intended to enable bilateral conservation and enhancement to prevent overfishing, increase production, and ensure that each country receives benefits equivalent to its own salmon production. The Commission also serves as a forum for consultation between the Parties on their salmonid enhancement operations and research programs.

The Commission comprises four Commissioners (and alternates) from each country as the principle deliberative body. The Commission has also established numerous subsidiary committees, and four geographically oriented panels. The Panels report to the Commission and provide advice on the conservation and management of selected stocks of concern, with certain exceptions as noted below:

Transboundary Panel: stocks originating from the Alsek, Stikine and Taku River systems.

Northern Panel: stocks originating in rivers situated between Cape Suckling in Alaska and Cape Caution in British Columbia.

Southern Panel: stocks originating in rivers located south of Cape Caution, other than Fraser River sockeye and pink salmon.

Fraser River Panel: has special in-season regulatory responsibilities for stocks of sockeye and pink salmon originating from the Fraser River.

Yukon River Panel: makes recommendations to authorities in Alaska and the Canadian government concerning the conservation and coordinated management of salmon originating in the Yukon River in Canada, but does not report to the Commission.

The panels review annual post-season reports, annual pre-season fishing plans and ongoing and planned salmonid enhancement programs of each country. They also provide recommendations to the Commission for development of fishery regimes in accordance with the objectives of the Treaty. These regimes, once adopted by the Commission and accepted by the Parties, are implemented by the relevant fishery management agencies in each country.

The Parties accord the Fraser River Panel special responsibility for in-season regulation of Fraser River sockeye and pink fisheries of Canada and the United States in southern British Columbia and northern Puget Sound, in an area designated as Fraser River Panel Area Waters. Scientific and technical work is conducted for the Panel by the Fishery Management Division of the Commission's Secretariat staff.

With long-term fishery arrangements in place through periodic amendment of the Treaty, the meeting agendas for the Commission have concentrated on implementation that will improve fisheries management and aid the countries' efforts to recover weakened stocks. These provisions include establishment of two bilaterally-managed restoration and enhancement funds, provisions to enhance bilateral cooperation, and improvements to the scientific basis for salmon management.

The Commission generally meets three times annually and conducts its business between meetings through its permanent Secretariat located in Vancouver, British Columbia. In the period April 1, 2016 to March 31, 2017, the Commission met on three occasions:

1. Fall Session
October 3-7, 2016. Vancouver B.C.
2. Post-Season Meeting of the Commission and Panels
January 9-13, 2017. Vancouver B.C.
3. Thirty-Second Annual Meeting of the Commission
February 13-17, 2017. Portland, OR.

This, the Thirty-Second Annual Report of the Pacific Salmon Commission, provides a synopsis of the activities of the Commission and its subsidiary bodies during its Thirty-second fiscal year of operation, April 1, 2016 to March 31, 2017.

Activities of the Commission

PART I

ACTIVITIES OF THE COMMISSION

A. FALL SESSION OF THE PACIFIC SALMON COMMISSION

October 2016, Vancouver, B.C.

The Commission met in three bilateral sessions during the meeting.

Ms. Donna Darm, the recently appointed U.S. Commissioner from NOAA Fisheries, was welcomed to the Commission table.

Mr. John Field, PSC Executive Secretary, reported that the Secretariat established a member's portal on the newly redesigned PSC website that would house all PSC meeting-related documents.

Mr. Field reported that the Northern and Southern Fund Committees approved funding for a special project that he proposed whereby two economists, one Canadian and one American, would carry out an economic impact analysis of fisheries covered by the Pacific Salmon Treaty. The goal of the project was to develop a common set of metrics to evaluate the economic impacts of United States and Canadian salmon fisheries. Mr. Field presented a draft agreement about the proposed economic analysis study that included a description of goals, the study's terms of reference, and milestones including timelines for Commission input. The Commission directed Mr. Field to meet with its designated experts on economic, Tribal, and First Nation aspects of salmon fisheries to finalize the agreement and proceed with the study.

The Commission discussed a proposal presented by Canada about developing a code of conduct for the Chinook Technical Committee (CTC). The Commission agreed that a subset of Commissioners (Allen, Farlinger, Reid, and Swanton) would form an ad hoc CTC Code of Conduct Committee.

The Commission received a report from the Chinook Interface Group (CIG) on its discussions about several topics including the CTC Chapter 3 performance evaluation report, CTC data reporting, the CTC work plan, the Chinook Model transition schedule, and the Very High Priority Chinook Project (VHPC) proposal process.

Dr. Randal Peterman, Mr. Ray Beamesderfer, and Mr. Brian Bue, members of the expert panel charged with reviewing methods for forecasting Chinook salmon abundance, delivered an interim report. The Commission discussed the report and agreed that the CIG co-chairs would work with the PSC chair and vice-chair to finalize memos to the expert panel and the CTC about how to proceed regarding the final report.

The Commission received an update from the Chinook negotiating team. The team agreed upon a negotiating process and upon the composition of the negotiating team.

Mr. John Carlile, Chinook Technical Committee (CTC) Co-Chair, reported on the action plan for the Commission's transition to the new Chinook model.

Mr. Alex Wertheimer, Dr. Jeff Hard, and Mr. Mark Saunders, members of the Committee on Scientific Cooperation (CSC), presented an update about the CSC's assignment "to develop a proposal for annual collection of data on the environment, run size, fish condition and other metrics that may reveal anomalies in salmon survival".

Mr. Chuck Parken, Sentinel Stocks Committee (SSC) Co-Chair, provided an update about the Sentinel Stocks Program (SSP). He presented a draft of the executive summary of the SSC's final report that would summarize key findings of the six years of studies completed under the program.

The Commission received an update from Dr. Riddell about the Fraser Strategic Review Committee process.

Mr. Allen, Finance and Administration Committee Chair, presented the "Report of the Standing Committee on Finance and Administration on Test Fishing Operations" dated October 7, 2016. The report included a review of the 2016 test fishing program and provided information about plans for the test fishery program in 2017 and beyond.

The Commission discussed the annual workplans submitted by the Panels and Committees.

The Commission adopted instructions to the Panels and Committees.

The Commission approved the PSC Slate of Officers for 2016/2017.

B. MEETING OF THE COMMISSION AND PANELS

January 2017, Vancouver, B.C.

The Commission met in three bilateral sittings during the week.

Executive Secretary John Field provided an update about the status of the economic impact analysis project commissioned by the Southern and Northern Fund Committees.

As directed by the Commission, Mr. Field and the two consultants conducting the study met with the national points of contact to discuss economic and subsistence issues in late October 2016. The consultants subsequently developed draft terms of reference for the study that were circulated to the National Sections. The contractors would consult with the leaders of the First Nations and Tribal communities as their work progressed.

The Commission discussed and accepted the final report to the Pacific Salmon Commission by the expert panel on Chinook forecast methodologies, entitled "Review of Methods for Forecasting Chinook Salmon Abundance in the Pacific Salmon Treaty Areas" submitted to the Commission in November 2016.

The Commission agreed to note the acceptance of the report in the PSC 2016/2017 annual report, to consider the feasibility of the report recommendations via an assignment given to the Chinook Technical Committee (CTC) in October 2016, and to publish the report in the PSC Technical Report Series (eventually published as PSC Technical Report #35). The Commission received a report from the bilateral Chinook negotiating team. Both Parties were developing negotiating positions to bring forward at future bilateral negotiating team meetings.

The Commission received a report from Ms. Dani Evenson, Fisheries Scientist with the Alaska Department of Fish and Game and ADF&G Troll Fishery Manager, Mr. Grant Hagerman about the Southeast Alaska (SEAK) Mark Selective Fishery (MSF).

The Chinook Interface Group presented a paper that set out a proposed role for the PSC and the CTC in providing strategic advice to the Joint Fund Committees about Very High Priority

Chinook (VHPC) project proposals from 2016 to 2018. The Commission adopted the revised process for VHPC guidance to the Joint Fund Committee, as proposed by the CIG.

The Commission discussed and adopted the CIG's recommendations on Chinook Technical Committee work plan task priorities.

The Commission discussed and accepted the Canadian and the United States 2016 post-season fishing reports.

The Commission received progress reports on work plans and status updates on negotiations from the Northern, Southern, and Transboundary panels.

The Commission received progress reports on work plans from the Fraser River Panel and from the Committee on Scientific Cooperation.

C. PACIFIC SALMON COMMISSION ANNUAL MEETING February 2017, Portland, Oregon

The Commission met four times in bilateral session during the meeting.

The Commission discussed the status of the Pacific Salmon Treaty Annex IV negotiations including changes proposed to the protocol for PST Chinook Chapter negotiations adopted by the Commission in October 2015.

The Commission agreed that the protocol would be revised and the Chinook negotiating team would become the Commission negotiating team, and would be the vehicle through which all Panels engaged in negotiations would report back to the Commission.

Mr. Field reported that the consultants working on the study commissioned by the Joint Endowment Fund Committee on the economic impacts of Pacific salmon fisheries circulated a progress report to the Commissioners. The report included a list of data collected to date and described the gaps in the data that the consultants were trying to fill. The consultants were scheduled to submit their final report in May 2017.

Dr. Gary Morishima, Co-Chair of the Selective Fishery Evaluation Committee (SFEC), presented the 2017 SFEC annual report, summarized major issues facing the Committee, and outlined SFEC's future plans.

The Commission recognized the importance of reviewing mass marking and mark selective fishery programs and agreed to take the Committee's recommendations into consideration during the Annex renegotiation period as well as when managing fisheries on an ongoing basis.

Mr. Angus MacKay, Endowment Fund Manager, presented the "Annual Report of the Southern Boundary Restoration and Enhancement Fund and the Northern Boundary and Transboundary Rivers Restoration and Enhancement Fund for the year 2016".

The Commission discussed and adopted a proposal on habitat issues finalized by Mr. Anderson and Ms. Farlinger. The proposal included a recommendation about the future of the Habitat and Restoration Technical Committee (HRTC). The Commission agreed that given the habitat work carried out by the Parties, there was no need for the continuation of the HRTC. The Committee was thereby eliminated.

Dr. Carmel Lowe and Mr. Alex Wertheimer, Chair and Vice-Chair of the Committee on Scientific Cooperation presented the Committee on Scientific Cooperation (CSC) Annual Report.

The report was an update on three approved elements of the CSC's 2017 work plan including the CSC's investigation into the Commission's potential involvement in the International Year of the Salmon (IYS) initiative, the CSC's involvement in the Radio Frequency Identification (RFID) Tag Review, and progress made by the Committee on its assignment to document environmental anomalies.

The Commission discussed and adopted the report of the Standing Committee on Finance and Administration Committee, including the budget for 2017/2018.

Mr. Carlile, Chinook Technical Committee Co-Chair presented the "CTC Progress Report for the Week of February 13-17, 2017", which addressed several CTC tasks including the CTC feasibility assessment of the recommendations of the expert panel on forecasting. The Commission agreed to revisit this feasibility assessment at the 2017 Fall Meeting.

The Commission negotiating team reported that it received reports and updates on Chapter renegotiations from the Northern, Southern, and Transboundary panels.

The Commission presented a service recognition plaque to Mr. Mike Clark, who served as the Commissioner representing the U.S. Department of State from 2013 to 2016.

Activities of the Standing Committees

ACTIVITIES OF THE STANDING COMMITTEES

A. MEETINGS OF THE STANDING COMMITTEE ON FINANCE AND ADMINISTRATION

The Standing Committee on Finance and Administration met on several occasions throughout 2016 (on September 29, October 6, and December 12), as well as 2017 on January 12 (Post-Season Meeting), on February 6, and on February 16 (Annual Meeting). The Committee addressed a number of issues and made recommendations for the Commission's consideration as noted below.

Budget proposal for FY 2017/2018 and forecast through FY 2019/2020

The Committee reviewed the proposed budget for FY 2017/2018 and forecast budget for FY 2018/2019 and 2019/2020. It was agreed that certain costs (Test Fishing Manager's partial salary, seasonal test fishing field staff, and shipping) would be permanently re-incorporated into the ordinary budget, after a temporary allocation of these to test fishing budgets from 2014 to 2016.

Accordingly, the Committee recommends that the Commission adopt the proposed budget for FY2017/2018 as shown in Attachment 1.

Unfunded pension liability

In 2015, the Parties worked with the Secretariat to identify supplementary funding for FY 2016/2017, 2017/2018 and 2018/2019 to mitigate the unfunded pension liability and relieve budgetary pressure on the Commission. To date, Canada has contributed \$330,000 (\$110,000 for each of the three years), while the U.S. has contributed \$110,000 for FY 2016/2017. The U.S. has been invoiced \$110,000 for FY 2017/2018.

The next actuarial valuation of the pension will be made available in April 2017 and the Secretariat expects to see higher unfunded pension liability payments beginning January 1, 2018 as a result of the new valuation. Pending the results of the April 2017 actuarial valuation, the Secretariat has included its best estimate of higher liability payments for budget planning in 2017/2018 and beyond.

The Secretariat will inform the Committee of the results of the new actuarial valuation and will work with the members to determine whether increased supplementary funding for the unfunded pension liability will be required beyond 2017/2018.

Test fishing

Test fishing finances continue to be a significant issue for the Parties, after extremely low returns of Fraser River sockeye and pink salmon in 2015 and 2016. Those low returns precluded the capture and sale of adequate fish to recover test fishing costs in those years and lowered the Test Fishing Revolving Fund (TFRF) to a balance of \$467,000 CAD (after supplemental contributions from each Party in early 2016).

The addition of supplemental funds remains an outstanding question between the Parties with regard to whether each Party is in a position to contribute additional funds to the TFRF to support an agreed upon test fishing schedule. This issue will need further discussion within each government and between the Parties in order to understand the level of investment each Party might be able to supplement the TFRF.

The Committee has coordinated with the Fraser River Panel and the Secretariat to discuss a test fishing schedule for 2017. The Panel is expected to approve this schedule and retain flexibility to adjust it in season in accordance with run size and evolving assessment needs. The Committee has provided the caveat that

the Panel cannot incur operational deficits greater than \$467,000 CAD (the TFRF balance) without prior consultation with the Committee.

The Committee recognizes that test fishing finances should not be handled through ad hoc yearly agreements, and is hopeful that the PSC test fishing workshops underway will offer guidance or solutions in the near term.

In order to better understand drivers of inter-annual budget variability, including test fishing expenses, the Executive Secretary will liaise with national contacts to develop a discussion paper on the topic. This paper will describe drivers of expense variability and offer options for controlling them in the near term. The Committee expects to discuss this paper in May 2017 via teleconference, and will report any findings to the Commission at the 2017 Fall Meeting.

B. MEETINGS OF THE STANDING COMMITTEE ON SCIENTIFIC COOPERATION

During 2016/2017 the Committee on Scientific Cooperation(CSC) focused on three tasks.

The CSC began to investigate the Commission's potential involvement in the International Year of the Salmon (IYS) initiative, an international framework for collaborative outreach and research to be implemented over the period 2017-2022. The IYS was initiated by the North Pacific Anadromous Fish Commission (NPAFC) and the North Atlantic Salmon Conservation Organization (NASCO). Planning was underway with potential partners including ICES/PICES, government agencies, First Nations, NGOs, universities and industry.

The inaugural meeting of the North Pacific Steering Committee for the IYS initiative took place in Vancouver, B.C. on Feb 28 – Mar 01, 2017. The PSC Executive Secretary, an ex officio member of the CSC, participated in the meeting and submitted a report on the proceedings to the Commission Chair and Vice-Chair in March.

In 2016, the CSC initiated a review of the status of radio frequency identification (RFID) tag (micro and PIT tag) technology and its potential to replace the PSC's coast-wide Chinook and Coho Coded Wire Tag (CWT) program as a follow-up to the 2005 CWT Expert Panel Review. With funding from the Northern Endowment Fund, the CSC initiated the project: "The Feasibility of Radio Frequency Identification Tags for Marking Juvenile Salmon for Pacific Salmon Commission Management Applications".

The CSC provided support and guidance to LGL Ltd., the company awarded the contract, by participating in iterative teleconferences and arranging for reviews of the draft report by the Coho Technical Committee and other science experts. The final report was submitted on February 8, 2017 (eventually published as PSC Technical Report #36) and a presentation of the report and its recommendations was delivered at the Annual Meeting of the Commission in February 2017.

Based on a review of the report and comments from the PSC science community, the CSC made recommendations to the Commission about the future of RFID in the management of PSC Chinook and Coho fisheries.

The third task that the Committee focused on in 2016/2017 resulted from the Commission's assignment to the CSC to develop a plan for documenting environmental conditions and evaluating their implications for salmon production under the Treaty.

The CSC initiated a two-phase approach to consider and evaluate environmental and biological anomalies. Dr. Skip McKinnell was awarded the contract to work on both phases.

In phase one, he documented environmental anomalies observed in 2015 and, where feasible in 2016. In phase two, he assessed the anomalies and their implications for PSC management of its fisheries in view of historical patterns of anomalous observations.

Dr. McKinnell's report on phase one was presented to the Commission in January 2017 and he presented the report on phase two to the PSC scientific community at February 2017 Annual Meeting. These two reports were combined and published as PSC Technical Report #37.

As per the Commission instruction for phase two of the assignment, the CSC provided the Commission with a document entitled "Developing a strategy for on-going consideration of annual environmental variability and its impact on salmon production and management". The Commission directed the CSC to elaborate on this strategy for further consideration at the 2017 Fall Meeting.

C. MEETINGS OF THE NORTHERN AND SOUTHERN FUND COMMITTEES

The Northern and Southern Fund Committees have agreed that given the congruent nature of their agendas, their decision to combine the funds into a single master account for investment management purposes, and the efficiencies involved with respect to interaction with the Fund managers, it was appropriate to meet together as a Joint Fund Committee at least once a year, preferably twice, for Fund financial reviews and investment manager interviews. The Fund Committees have also determined that it is beneficial to meet jointly early in the year during their annual project selection meetings to discuss and determine co-funding arrangements for very high priority chinook projects. Thus, the Joint Fund Committees met in person three times during fiscal year 2016/17. On April 27th, 2016; and again, on November 15th & 16th, 2016 and finally on February 22nd, 2017.

The Spring meeting of the joint Northern and Southern Fund Committees was held in Vancouver on the morning of April 27th. Ms. Kamila Geisbrecht of Aon Hewitt opened the meeting by updating Committee members on the activities of the global manager search sub-committee who had held one conference call and who planned to hold in-person interviews with a short-list of selected candidature managers the following day. She recapped the closing out of the Brandes account and the temporary transfer of those assets to a BlackRock account pending selection of a new global equities manager. Ms. Geisbrecht then presented the 2015 Q4 investment performance report and gave a preview of Q1 2016 which she described as having been markedly volatile. Responding to a question raised by Committee members on the performance of the Fund's fixed income (bonds) portfolio, Ms. Geisbrecht described strategies for active fixed income management. Following the Aon presentations, Mr. Mackay made a request for additional administrative funding in the amount of \$30,000 U.S. p.a. for a permanent part-time clerical assistant to the Fund to allow existing staff to devote more time to program enhancements and upgrades that would keep the Fund improving its service delivery standards. The request was approved. Next, PSC Secretariat Controller Ms. Ilinca Manisali presented the Fund's 2016/17 administration budget for Committee consideration. A motion to accept the budget as presented was moved and seconded. Executive Secretary Mr. John Field then recapped the very high priority chinook project process and a discussion ensued on the twin topics of ever-increasing core agency funding requests and the consequential reduction in discretionary funding opportunities for the Fund Committees. This led to a frank exchange on the advisability of supporting essential Treaty implementation activities on stock market returns. Mr. Field helped Committee members explore avenues for conveying the Fund Committees concerns on these issues to the Commissioners.

The joint Northern and Southern Fund Committees met together for the second time in 2016 in Vancouver on the afternoon of November 15th and all day on November 16th. The afternoon of the 15th opened with Mr. Mackay summarizing the very high priority chinook project proposal selection processes applied by the Northern and Southern Fund Committees and a review of the lists of very high priority chinook proposals selected to move to the second round of reviews. There was also a discussion on the Northern

Fund's technical review process and confirmation that the Northern Fund's technical reviewers would also review the Southern Fund's very high priority chinook proposals. In the next agenda item, Executive Secretary John Field reported back on his presentation at the PSC's October Executive Session of the Northern Fund Committee's update memo to the Commissioners concerning the 2017 Northern Fund process with respect to very high priority chinook projects. He reported that the Commissioners had no objection to the Northern Fund technical review process. The Commissioners agreed that the Chinook Technical Committee (CTC) were too busy to undertake a technical review of the 2017 proposals. The Chinook Interface Group (CIG) would contemplate the CTC's role going forward and develop a position for the Commissioners as to what the CTC's role in the process might be in 2018. After this agenda item, the Northern and Southern Fund Committees took the opportunity to arrange to meet together in person in February 2017 to finalize very high priority chinook project funding and or shared funding as required.

Mr. Field next reported on his presentation to the Commissioners of the Northern Fund's memo on core agency funding which emphasized (i) the burgeoning annual growth of core agency funding requests being made on the Fund and, (ii) the risks associated with becoming financially dependent on support for Treaty related obligations from interest earned on unpredictable stock market investments. Mr. Field said the Commissioners noted the memo, but they had no further comment.

On the third agenda item Mr. Field reminded the Fund Committees that they had agreed, each at their separate September first round project proposal review meetings, to fund a comprehensive economic impact analysis of Pacific Salmon Treaty fisheries with grants of \$50,000 U.S. respectively North and South. The project was deemed by the Committees to be significant enough to be implemented immediately without waiting for the final conclusion of the second round 2017 project selection process in February. Mr. Field reported that a contract for the project had been issued to Canadian and U.S. consulting experts; a progress report would be completed in February 2017; and, the final report would be delivered in May 2017.

The next agenda item concerned the honoraria paid to non-agency members of the Fund Committees, specifically the disparity between the amount paid to U.S. and Canadian Committee members. A lengthy discussion followed covering the original basis for setting national honoraria levels; the extent of the imbalance since inception; the equity principal; and, implications for other PSC related honorarium payments. Unable to reach resolution on the matter, the Committees agreed to return to the issue the following day.

Mr. Field provided an update report to the Fund Committee members on the implementation of SharePoint including hardware installation and portal development which the Funds had supported financially in 2013 and again in 2014.

Mr. Mackay asked the Committees about their interest in financially supporting a third informative evening seminar at the PSC's post-season meeting in Vancouver in January 2017. Having sponsored successful and well attended events in 2015 and 2016, the Committees decided to waive this opportunity for 2017.

The following day, on November 16th the Committees met again in joint session for their annual financial meeting, investment manager performance review, and manager interviews. Ms. Kamila Geisbrecht of Aon Hewitt opened the meeting by describing the final transition of Fund assets to Morgan Stanley, the new global equities manager. She thanked the global manager search sub-committee for their work on the changeover. In their turn the sub-committee commended Ms. Geisbrecht to the joint Fund Committee members for her perseverance in negotiating the fee structure with Morgan Stanley. In follow up discussions the issue of fixed income assets arose again and the Committee again expressed an interest in exploring opportunities to optimize this element of the portfolio. This led to a direction from the Committee to Aon to review the current asset mix as a whole and identify opportunities to improve the risk-reward profile of the master trust by investigating the inclusion of additional asset classes and or changing the mix between fixed income and variable income asset classes. A sub-committee was struck to implement this action item.

Ms. Geisbrecht then presented the third Quarter report for 2016 (summarized in the investment review above).

The Committee then returned to the issue of non-agency member honoraria. U.S. committee members were generally of the opinion that the issue was a Canadian domestic one. Canadian Committee members accepted the need for further input on the subject at the Canadian federal level and agreed to postpone further Committee discussion on the topic until the February 2017 Fund Committee meeting.

The Committee then received the in-person presentations from the Fund managers: LSV (international equities manager), RARE (infrastructure manager), Invesco (real estate manager) and Morgan Stanley (global equity manager). The Committee was generally satisfied with the managers' reports and were interested to hear in-person from their new global manager Morgan Stanley for the first time.

The joint Northern and Southern Fund Committees met together for the third and final time in fiscal year 2016/17 in Vancouver on the morning of February 22nd. At this meeting the two Committees discussed funding arrangements such that the suite of approved very high priority chinook (VHPC) projects proposed for 2017 could be supported with grants from the two Funds. This was successfully negotiated with the Southern Fund awarding grants in the amount of \$1.1M US to 11 VHPC projects and the Northern Fund awarding grants in the amount of \$1.5M US to 15 VHPC projects.

Northern Fund Committee Meetings

The Northern Fund Committee met in separate session on three occasions during 2016/17.

April 26th (p.m. only) and 27th (p.m. only), 2016

- Performance criteria for two Northern Fund supported Canadian very high priority chinook projects as proposed by the Committee's bilateral technical support personnel.
- Potential for a Call for Proposals for 2017.
- Fund financial obligations in 2017.
- Consideration of Year 3 very high priority Chapter 3 chinook projects.
- Timetable.

September 13th to 15th, 2016 (held at the Listel Hotel in Vancouver).

- First round selection of 2017 Northern Fund project concepts to be invited to proceed to Stage Two detailed proposals.
- Review of audited financial statements.
- Consideration of proposed Fund Committee communications with the Commissioners at the Commissioner's October Executive Session.
- 2016 exchange rate report.

February 21st and 22nd, 2017.

- Final selection of Northern Fund projects for funding in 2017.
- Discussions with Southern Fund on funding strategies and co-funding for the very high priority chinook projects.
- Specific technical feedback to the proponents.
- Consideration of improvements to the 2018 Call process.

Southern Fund Committee Meetings

The Southern Fund Committee met in separate session four times during 2016/17.

April 26th (p.m. only) and 27th (p.m. only), 2016.

- Annual report on Year 2 of the Salish Sea Marine Survival Program from U.S. and Canadian partners Long Live the Kings & the Pacific Salmon Foundation.
- Potential for a Call for Proposals for 2017.
- Fund financial obligations in 2017.
- Consideration of Year 3 very high priority Chapter 3 chinook projects.
- Timetable.

September 27th, 2016.

- First round selection of 2017 Southern Fund project concepts to be invited to proceed to Stage Two detailed proposals.
- Review of audited financial statements.
- Consideration of proposed Northern Fund Committee communications with the Commissioners at the Commissioner's October Executive Session.

September 28th and 29th, 2016.

- Three members of the Southern Fund Committee with Fund staff undertook a field trip to Washington State in September 2016. Driving from Port Townsend the group were met by WDFW and Olympic National Park staff in Port Angeles for a fact finding and educational tour of a number of significant sites along the Elwha River now in a state of rehabilitation following the removal of two dams on the river – possibly the largest fish habitat restoration project in the region. The following day the group were the guests of the Stillaguamish Tribe and received updates from their fisheries staff on current projects in the watershed. The group also toured the tribal hatchery site near Arlington.

February 21st and 22nd, 2017

- Final selection of Southern Fund projects for funding in 2017.
- Core agency funding review.
- Discussions with Northern Fund on funding strategies and co-funding for the very high priority chinook projects.

Global Manager Selection Sub-Committee Meetings

The Sub-Committee met twice during 2016/17.

April 28th, 2016

- Members of the sub-committee with Fund staff and consultants from Aon Hewitt interviewed representatives from Carnegie Asset Management, Fiera Capital Corporation, Morgan Stanley Investment Management and Walter Scott & Partners Limited. Morgan Stanley were selected to be recommended to the full Joint Fund Committee as the new global assets manager for the master trust.

June 29th, 2016

- Conference call with the full Joint Fund Committee at which the global manager search sub-committee recommended hiring Morgan Stanley as the new global assets manager for the master trust. The recommendation was approved.

Activities of the Panels

PART III

ACTIVITIES OF THE PANELS

A. FRASER RIVER PANEL

At the January meeting the Panel received reports reviewing the 2016 fishing season, addressed Total Allowable Catch (TAC) calculations, and looked at several items pertaining to test fishing which included an overview of the test fishing workshop held November 2-3, 2016, program costs, alternative program scenarios for the 2017 season, and the interaction between in-season assessment needs and the 2017 test fishery schedule. Next steps were also reviewed for the Fraser River Strategic Review Committee (FRSRC) on hydroacoustics. At the February meeting the Panel received reports from Canada on 2016 escapements, 2017 pre-season forecasts for Fraser River sockeye and pink salmon, and finalized the TAC and allocation status for 2016. Additional reports were provided regarding Washington sockeye and pink salmon pre-season forecast and historical returns, a progress report related to activities supporting the FRSRC tasks on acoustics, and test fishing options regarding the 2017 schedule and next steps for determining test fishery retention guidelines in 2017.

B. NORTHERN PANEL

No reports were finalized for publication during this reporting period.

C. SOUTHERN PANEL

In support of the PST renegotiation process for the Southern Coho Agreement within Chapter 5, and in response to concerns with the existing Chapter, the Southern Panel determined that having a workshop to explore alternative management strategies was a high priority. Funding was secured in early 2016 through the Southern Endowment Fund (SEF) to support external consultants to assist with the project. The project was jointly implemented by consultants from ESSA Technologies and a subset of the Coho Working Group (CoWG; a subset of Southern Panel and Coho Technical Committee (CoTC) members), with engagement and contributions from the broader CoWG and CoTC.

Bilateral meetings of CoWG and CoTC occurred during the 2016 cycle in support of the SEF-funded project titled "Southern Coho Alternative Management Strategies Workshop." From May 10-11, 2016, the bilateral Coho Working Group met in Bellingham, WA to start planning the approach and scope of the workshop project, as well as to discuss scheduling of bilateral information exchange for Coho and Chum priorities for the Southern Endowment Fund. During the last week of July 2016, the CoTC met in Victoria, BC to describe a set of alternative strategies for evaluation. During the July meeting CoTC focused their bilateral work on describing four contrasting strategies, in addition to the current Chapter, that were under consideration within a common template, as well as generating a list of critical questions necessary for evaluating the strategies against key objectives. In early Fall 2016, from September 28-29, 2016 the bilateral CoWG met again in Bellingham, WA. The focus of this meeting was again preparation for the alternative management strategies workshop, but time was also spent planning for upcoming Panel meetings in early 2017 and negotiations. At this September meeting, the CoWG was introduced to and reviewed the alternative strategies developed by the CoTC in July. Additionally, in collaboration with ESSA representatives, CoWG reviewed the proposed approach for the November workshop and started initial work to populate a strategy evaluation table. These efforts culminated in the Southern Coho Alternative Management Strategies Workshop occurring from November 28-29, 2016 at the Stillaguamish Tribe's Natural Resources Office near Arlington, WA. Workshop objectives were as follows:

- (1) Develop a common understanding of the most pressing issues and challenges with the implementation of the current Coho Chapter.

- (2) Communicate how and where the current workshop complements the renegotiation process.
- (3) Explore illustrative examples of alternative strategies designed to address particular issues and challenges with the current Coho Chapter and strengths and weaknesses associated with each strategy.
- (4) Explore the trade-offs among the alternative strategies with respect to the problem(s) they seek to address and the different potential outcomes associated with them.

Approximately one and a half months following the Coho workshop, the bilateral Southern Panel met from January 9-13, 2017 at the PSC Post Season meeting in Vancouver, BC. As the meeting started, the US and Canadian Sections of the Panel developed an agenda that included significant section time to enable development of proposals to initiate renegotiation Chapter 5 (Coho) and Chapter 6 (Chum) of the PST. Early in the week the bilateral Panel met and received the presentations on the US and Canadian Post Season reports. Also, the bilateral Panel reviewed and edited the 2017 Southern Panel work plan in order to advance the timeframe for negotiations of Chapters 5 and 6, working to fulfill the PSC Commissioners' instructions to complete the majority of work needed for renegotiation by June 2017. On January 10, ESSA Technologies provided a presentation to the bilateral Panel summarizing their initial findings and key outcomes from the SEF-funded Southern Coho Alternative Management Strategies Workshop. Throughout the rest of the January meeting, the US and Canadian sections exchanged initial written proposals for the renegotiation of Chapter 5 (Coho) and Chapter 6 (Chum) and presented responses verbally as well during bilateral sessions. While there were several points of agreement between the Parties on Chapters 5 and 6, there remained several key issues that required further negotiation time to resolve.

The bilateral Southern Panel met for a second time during 2017 at the PSC Annual meeting in Portland, Oregon from February 13-17, 2017. The Panel met and received presentations on: 1) the 2015 Post Season assessment of Coho exploitation rates from the Coho Technical Committee (CoTC); 2) final draft report from ESSA Technologies highlighting the outcomes of the Southern Coho Alternative Management Strategies Workshop conducted in November 2016; 3) Laurie Weitkamp's (NOAA and CoTC) review of ocean indicators, including patterns of environmental variability and expected effects on Pacific Northwest Salmon; 4) updates on the status of the Chum Technical Committee's (Chum TC) research projects; and 5) the Southern Endowment Fund (SEF) priorities for both CoTC and Chum TC. The majority of the February session was spent both in sections and bilaterally advancing proposals between the Parties for renegotiation of Chapters 5 and 6. While the Parties came to agreement on some items in each chapter, there remained key issues requiring additional negotiation time to resolve. Finally, the Panel advanced plans for an early May meeting of the Panel to continue the negotiation process with intervening exchanges between the February meeting and the May meeting.

By the conclusion of the February 13-17, 2017 Southern Panel meeting, the US and Canada had narrowed the focus of negotiations to three key outstanding policy issues for the Chum Chapter and five key issues for the Coho Chapter. The three remaining issues for the Chum Chapter were: 1) US proposal for an Area 7/7A Chum fishery catch ceiling increase triggered by the in-season Fraser River Chum run size exceeding a defined threshold; 2) US proposal to change the payback provision for management error to a rate rather than a fixed number; and 3) US proposal for an earlier start date of the US 7/7A Chum fishery.

The five key issues needing further negotiation work for the Coho Chapter were as follows: 1) Assurance that the Parties will adhere to obligations and commitments set forth in the next Coho Chapter; 2) Accountability for harvest impacts; 3) Reliable pre-season information exchange; 4) Limited flexibility in evaluating compliance with exploitation rate caps; and 5) CoTC workload and focus.

D. TRANSBOUNDARY PANEL

The Transboundary Rivers Panel (Panel) held two series of bilateral sessions in conjunction with the Pacific Salmon Commissions meetings, the first being the 2017 Post-Season meeting in Vancouver (January 9-13, 2017) while the second was the 2017 Annual meeting in Portland (February 13-17, 2017).

At its Post-Season meeting in January, fishery managers, enhancement project coordinators, scientific and technical staff from both the United States and Canada presented information to the Panel pertaining to treaty-related fishery performance, overall status of stocks and enhancement activities in the Transboundary Rivers treaty area for the 2016 season. The Panel also received presentations on the result of 2015 Taku and Stikine Sockeye Salmon Enhancement Production Plans (2016 fry releases resulting from 2015 egg takes). On review the, Panel Co-Chairs approved the results of sockeye enhancement programs as presented (which included the release of 3.4 million sockeye salmon fry into Tahltan Lake and absence of a release into Tuya Lake resulting from Canadian modification of the Stikine Enhancement Production Plan). Following the completion of the annual post-season review, the remainder of the meeting session was dedicated to bilateral discussions and exchange of documents in support of the renegotiation of the Transboundary Rivers Chapter as a component of the 2018 Pacific Salmon Treaty renewal.

The Transboundary Rivers Panel's annual meeting involved the review of pre-season outlooks for Alsek, Taku and Stikine River salmon stocks, a review of overage and underage considerations pertaining to the performance of 2016 fisheries, sockeye salmon enhancement programs planned for 2017, in-season assessment program plans for Taku River Chinook as well as an interim harvest share arrangement for Taku River coho salmon. On review, the Co-Chairs approved bilateral acceptance of the results of the 2012 Stikine Enhancement Production Plan (consistent with the requirements set out within Chapter 1, the Panel reviewed the Parties performance relative to sockeye salmon enhancement program activities initiated 5 years earlier and determined that no harvest share adjustments were warranted), the 2017 Taku River Enhancement Production Plan, and the 2017 Stikine Enhancement Production plan. The majority of the meeting session focused on a continuation of discussions and exchange of documents pertaining to the renegotiation of the Transboundary Rivers Chapter (building on information exchanged during the January 2017 meeting). Following the conclusion of negotiations, on February 17, 2017 the Transboundary Panel Co-Chairs presented a recommendation to Commissioners for the renewal the Transboundary Chapter of the Pacific Salmon Treaty (with modifications) for a period of 10 years.

Review of 2016 Fisheries and Treaty-Related Performance

PART IV

REVIEW OF 2016 FISHERIES AND TREATY-RELATED PERFORMANCE

A. FRASER RIVER SOCKEYE SALMON

Pre-season Planning

1. Pre-season expectations were for a median run size (p50 level, Appendix B) of 2,271,000 Fraser River sockeye salmon and a one in two chance that the run size would be between 1,296,000 and 4,227,000.
2. Pre-season expectations of migration parameters included a 75% diversion rate for Fraser River sockeye through Johnstone Strait. Expected Area 20 50% migration dates were July 3 for Early Stuart, July 21 for Early Summer, August 6 for Summer, and August 14 for Late-run sockeye.
3. Pre-season spawning escapement goals were 36,000 Early Stuart, 178,800 Early Summer, 722,000 Summer and 111,000 Late-run sockeye for a total of 1,047,800 sockeye spawners (Table 1). The goals for each sockeye management group were established by applying Canada's Spawning Escapement Plan (Appendix B) to the forecasted run size. For pre-season planning purposes, Early Stuart and Late-run sockeye were respectively constrained by a 10% and a 20% Low Abundance Exploitation Rate (LAER).
4. Management Adjustments (MAs) of 105,500 Early Summer and 79,400 Summer-run sockeye were added to the spawning escapement targets to increase the likelihood of achieving the targets. The spawning escapement targets for Early Stuart and Late-run sockeye were their entire run sizes at median forecast abundance levels. These targets coupled with the application of LAERs and the likelihood of some differences between estimates (DBEs) meant that spawning escapement targets were unlikely to be reached and therefore obviated the need for management adjustments for these two groups.
5. The pre-season MAs were derived from proportional difference between estimates (pDBE) for the Early Summer and Summer-run aggregates. These in turn were estimated as the weighted average of each component's median pDBE using historic data and their median pre-season forecast abundances. For Early Summer-run, the three components consisted of Chilliwack, Pitt and the remaining Early Summer-run stocks while the Summer-run aggregate was divided into Harrison and non-Harrison components. The median pDBE for Chilliwack was calculated using dominant/subdominant years, while the median for all other component groups was based on all years.
6. The projected Total Allowable Catch (TAC) of Fraser River sockeye salmon based on the median forecasted abundances and agreed deductions was 647,700 sockeye (Table 1), of which 16.5% (106,000 sockeye) were allocated to the United States (U.S.).
7. Pre-season model runs indicated it was unlikely the Summer-run TAC could be fully harvested due to fisheries constraints required to achieve spawning escapement targets for co-migrating Early Summer and Late-run stocks.
8. The Panel adopted the Management Plan Principles and Constraints, the 2016 Regulations, and the 2016 Pre-season Agreement on Test Fishing Deductions (Appendices C, D and E).

In-season Management Considerations

9. Marine migration timing (Figure 3) was earlier than pre-season expectations for all management groups (except Early Stuart fish where the observed timing matched the expected timing): one day for Early Summer run, and 6 days for Summer run and Late run. No delay was detected in the migration behaviour for the Late run.
10. The overall Johnstone Strait diversion rate (Figure 4) for Fraser sockeye was 50% compared to the pre-season forecast of 75%.
11. Returns for all management groups were substantially below median pre-season forecasts (Early Stuart run: 50% below median forecast, Early Summer run: 46% below median forecast, Summer run: 68% below median forecast and Late run: 36% below median forecast). In context to the pre-season forecast range, the Early Stuart return was between the p10 and p25 forecast, the Early Summer run slightly above the p25 forecast, Summer run below the p10 forecast, and Late run slightly above the p25 forecast.
12. Fraser River discharge was below average for the duration of the season while river temperatures were above average (Figure 5). Despite the high temperatures, the in-season model estimate of differences between potential spawning escapement and the actual number of spawners on the spawning grounds (DBE) were similar to the pre-season forecast for the Early Summer run. While the in-season estimate for the Summer run was higher than pre-season values, no in-season updates to DBEs were adopted in 2016, as the pre-season forecast was similar to in-season for the Early Summer run, and the in-season run size for Early Stuart, Summer run and Late run resulted in the groups being managed under a low abundance exploitation rate (LAER) scenario, so DBEs were not relevant factors in determining management actions.

Run size, Catch, Escapement and Migration patterns

13. Returns of adult Fraser sockeye totalled 858,000 fish (Tables 7 and 8), less than half the brood year abundance of 2,057,700 fish in 2012. This return was the smallest over the last 50 years. Divided into management groups, adult returns totalled 18,000 Early Stuart, 241,000 Early Summer-run, 529,000 Summer-run and 71,000 Late-run sockeye.
14. Catches of Fraser River sockeye salmon in all fisheries totalled 160,000 fish, including 149,000 fish caught by Canada, 1,700 fish caught by the U.S. and 8,800 fish caught by test fisheries (Table 7). Almost all the Canadian catch occurred in First Nations FSC fisheries (Food, Social and Ceremonial, 148,400 fish). In Washington, catches were in non-commercial and Treaty Indian commercial fisheries (800 fish each). Fisheries in Alaska harvested 34,000 Fraser sockeye (preliminary estimate). The overall harvest rate was 19% of the run, which is the smallest in recent years, excluding 2009, 2013 and 2015 (Figure 7).
15. DFO's near-final estimates of spawning escapements to streams in the Fraser River watershed totalled 485,000 adult sockeye (Tables 7 and 8). This was about half the brood year escapement of 925,000 adults and the lowest escapement on this cycle since 1964. By management group and for this cycle line, spawning escapements in 2016 were one fourth of the average Early Stuart escapement, slightly higher than the average Early Summer-run escapement, less than 56% below the average Summer-run escapement and the lowest Late-run escapement on record (Figure 9). There were 229,300 effective female spawners in the Fraser watershed, representing an overall spawning success of 90.3%.

Achievement of Objectives

16. In order of descending priority, the goals of the Panel are to achieve the targets for spawning escapement, international sharing of the TAC, and domestic catch allocation.
17. In-season management decisions are based on targets for spawning escapement, which are represented in-season by potential spawning escapement targets (i.e., spawning escapement targets plus MAs). Early Stuart, Summer-run and Late-run sockeye were managed under a LAER, thus their potential spawning escapement targets were equal to the total returns for each group. In-season estimates of potential escapement (i.e., Mission escapement minus all catch above Mission) were 10-25% under the target for all management groups: Early Stuart sockeye (11% under), Early Summer-run (11% under), Summer-run (24% under) and Late-run sockeye (9% under) (Table 10).
18. Spawning ground estimates of Fraser sockeye abundance totalled 485,000 adults, which is 37% below the post-season target. Spawner abundance was severely below target for Early Stuart sockeye (52% under), on target for Early Summer-run, below target for Summer-run (48% under) and below target for Late-run sockeye (38% under) (Table 11). The Early Stuart (9%) and Late-run (9%) exploitation rate were both below their respective LAERs (10% and 20%). For Early Stuart, Summer-run and Late-run sockeye, the spawning escapement target equaled the run size, so the escapement target could only be obtained in the absence of catches *and* any difference between estimates. The Summer-run exploitation rate (24%) was higher than the 10% LAER for this management group. Even in the absence of catches, due to the observed difference between estimates, the Summer-run run size was insufficient to attain the escapement target, but reduced catches could have increased the spawning escapement to be closer to the target.
19. There was no International TAC (Total Allowable Catch) of Fraser sockeye (Table 12), based on the calculation method set out in Annex IV, Chapter 4 of the Pacific Salmon Treaty. The Washington catch of 1,700 Fraser sockeye was more than their 16.5% share. The total Canadian catch of 149,200 Fraser sockeye, which excludes the ESSR catch of Weaver sockeye (which was 0 in 2016) and includes a catch of 800 fish in the Albion test fishery was 800 fish more than the Canadian share of TAC + AFE. In these calculations, the TAC is fixed on the date that Panel control of the last U.S. Panel Area was relinquished (October 1 in 2016), while catches are post-season estimates.
20. In terms of domestic U.S. allocation objectives for Fraser sockeye, Treaty Indian fishers were 1,700 fish above their shares of the U.S. TAC (Table 13).
21. By-catches of non-Fraser sockeye salmon in commercial net fisheries regulated by the Fraser River Panel totalled 80 sockeye salmon (Table 14). Catches of other Fraser and non-Fraser salmon species included 190 chinook, 200 coho, and 30 chum.

Allocation Status

22. By Panel agreement there is a U.S. payback of 900 Fraser River sockeye to be carried forward from 2015. These were sockeye salmon that were landed in Panel regulated fisheries directed at Fraser River pink salmon in 2015. (Table 15). There is no payback owed for pink salmon.

B. 2016 POST-SEASON REPORT UNITED STATES SALMON FISHERIES OF RELEVANCE TO THE PACIFIC SALMON TREATY

Preliminary 2016 Southeast Alaska Fisheries

NORTHERN BOUNDARY AREA FISHERIES

District 104 Purse Seine Fishery

The 2009 Pacific Salmon Treaty (PST) Agreement calls for abundance based management of the District 104 purse seine fishery. The agreement allows the District 104 purse seine fishery to harvest 2.45 percent of the Annual Allowable Harvest (AAH) of Nass and Skeena sockeye salmon prior to Alaska Department of Fish and Game (ADFG) statistical week 31 (referred to as the treaty period). The AAH is calculated as the total run of Nass and Skeena sockeye salmon minus either the escapement requirement of 1.1 million (200,000 Nass and 900,000 Skeena) or the actual in-river escapement, whichever is less.

The District 104 purse seine fishery opens by regulation on the first Sunday in July. In 2016, the initial opening was July 3 (week 28). The pre-week 31 fishing plan for District 104 was based on the preseason Canadian Department of Fisheries and Oceans (DFO) forecast returns of approximately 1,959,000 Nass and Skeena sockeye salmon. Using this forecast, the 2016 pre-week 31 AAH was approximately 21,000 Nass and Skeena sockeye salmon in the District 104 purse seine fishery. In the 2016 Treaty period (Alaska statistical weeks 28-30), 110,346 sockeye were harvested during a 15 and 12-hour opening in Week 28; two 12-hour opening in Week 29, and one 6-hour opening in week 30 (Table 1). A total of 106 purse seine vessels fished at some time in the district during the Treaty period. In past years 60% to 80% of Treaty-period sockeye salmon have been of Nass and Skeena origin, therefore we would anticipate between 66,200 and 88,200 Nass and Skeena sockeye may have been harvested in the District 104 purse seine fishery during the 2016 Treaty period. The final number of Nass and Skeena sockeye salmon harvested, and the actual harvest by stock, will not be available until harvest, escapement, and stock composition estimates are finalized for the year.

In 2016, a total of 3,659,894 pink salmon, 405,989 sockeye salmon, 348,647 chum salmon, 123,696 coho salmon, and 12,206 Chinook salmon were harvested in the District 104 purse seine fishery (Table 1). The number of days that the fishery was open was well below the 1985-2015 average (Figure 1). The number of boats fishing was above average during the first two weeks of the season and then dropped below average for the remainder of the fishery (Figure 2). Chinook salmon harvests were well above average in most weeks of the fishery, and the harvest of 12,206 fish was 180% of the 1985-2015 average (Figure 3). Sockeye salmon harvests were above average early in the season (Figure 4) and the treaty period (week 28-30) harvest of 110,346 was 110% of the 1985-2015 average. The total sockeye salmon harvest of 405,989 was 84% of the 1985-2015 average of 482,000 fish. Harvests of coho salmon were far above average in weeks 28 and 29 and then dropped below average for the remainder of the season (Figures 5) and the overall harvest was close to the long-term average. Pink salmon harvests started off strong, but were well below average during the normal peak weeks of the fishery—the overall harvest was only 43% of the long-term average (Figure 6). Chum salmon harvests also started off very strong in weeks 28 and 29, but were below average through the remainder of the season (Figure 7).

Since the Pacific Salmon Treaty was signed in 1985, the number of hours open, boats fishing and boat-days fished in the pre-Week 31 annex period in District 104 are down 55%, 61% and 84% respectively compared to the averages in the pre-treaty 1980-1984 period (Table 2). The total pre-week 31 Treaty-period sockeye salmon harvest is also down 47%. The seine fleet moves freely between districts as various species are harvested, so seining opportunities elsewhere affect the effort and catch in District 104.

Table 1. – Catch and effort in the Alaska District 104 purse seine fishery, 2016

Week/ Opening	Start Date	Chinook	Sockeye	Coho	Pink	Chum	Boats	Hours
28	7/3	578	11,917	3,905	61,938	45,480	14	15
28B	7/7	918	16,034	16,380	250,125	60,300	82	12
29	7/10	1,348	26,127	22,224	424,441	66,254	77	12
29B	7/14	1,112	45,554	27,394	734,522	52,747	71	12
30	7/17	174	10,714	4,054	99,457	7,229	37	6
31	7/24	237	17,571	5,005	164,401	8,371	42	15
31B	7/28	1,196	53,211	12,281	408,116	20,049	49	15
32	7/31	2,256	120,948	13,988	671,348	32,590	69	39
32B	8/4	1,556	56,500	6,641	402,943	22,242	62	39
33	8/8	743	20,791	4,538	190,863	13,058	46	39
33B	8/12	1,303	11,896	3,166	94,133	7,185	48	15
34	8/15	327	7,642	1,841	91,256	6,603	41	15
34B	8/18	458	7,084	2,279	66,351	6,539	32	15
Permits Fished								
Weeks 28-30		4,130	110,346	73,957	1,570,483	232,010	106	57
Weeks 31-35		8,076	295,643	49,739	2,089,411	116,637	101	192
Total		12,206	405,989	123,696	3,659,894	348,647	134	249

Table 2. – Fishing opportunity, effort, and sockeye salmon harvest prior to week 31 in the District 104 purse seine fishery, 1980–2016.

	Individual		Days			Sockeye
	Hours	Permits	Fished	Approximate	Sockeye	Catch per
Year	Fished	Fished	(1d=15hrs)	Boat-Days	Harvest	Boat-Day
1980	207	244	13.8	2,877	266,273	93
1981	132	212	8.8	1,108	185,188	167
1982	117	255	7.8	1,435	213,150	149
1983	108	241	7.2	1,211	170,306	141
1984	132	174	8.8	805	103,319	128
1985	84	141	5.6	502	100,590	200
1986	108	194	7.2	968	91,320	94
1987	90	134	6	457	72,385	158
1988	108	210	7.2	994	248,789	250
1989	84	135	5.6	438	157,566	360
1990	42	171	2.8	276	169,943	615
1991	41	134	2.7	243	98,583	406
1992	29	108	1.9	142	79,643	561
1993	45	171	3	343	163,189	476
1994	55	84	3.7	202	158,524	783
1995	58	109	3.9	218	71,376	328
1996	31	113	2.1	128	215,144	1,684
1997	56	159	3.7	409	572,942	1,402
1998	32	78	2.1	89	17,394	196
1999	30	38	2	44	7,664	174

2000	81	66	5.4	192	48,969	255
2001	50	95	3.3	182	203,090	1,115
2002	72	44	4.8	124	26,554	215
2003	52	40	3.5	97	84,742	875
2004	107	24	7.1	102	30,758	302
2005	68	38	4.5	93	35,690	382
2006	95	39	6.3	117	89,615	766
2007	50	68	3.3	136	112,135	824
2008	33	17	2.2	22	6,262	281
2009	72	38	4.8	95	15,971	168
2010	55	21	3.7	39	4,617	118
2011	84	29	5.6	77	25,280	329
2012	75	30	5.0	93	18,300	196
2013	46	36	3.1	59	13,102	222
2014	60	101	4	260	115,015	442
2015	70	39	4.7	100	43,873	439
2016	57	106	3.8	313	110,346	353
Avg. 80-84	139	225	9	1,487	187,647	136
Avg. 85-15	63	88	4	236	100,293	468
% Change	-55%	-61%	-55%	-84%	-47%	245%

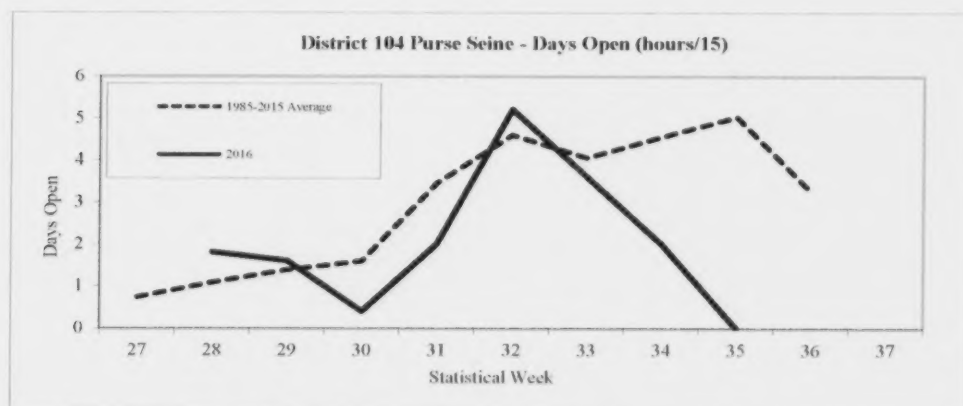


Figure 1. – Days open by week in the District 104 purse seine fishery, 2016.

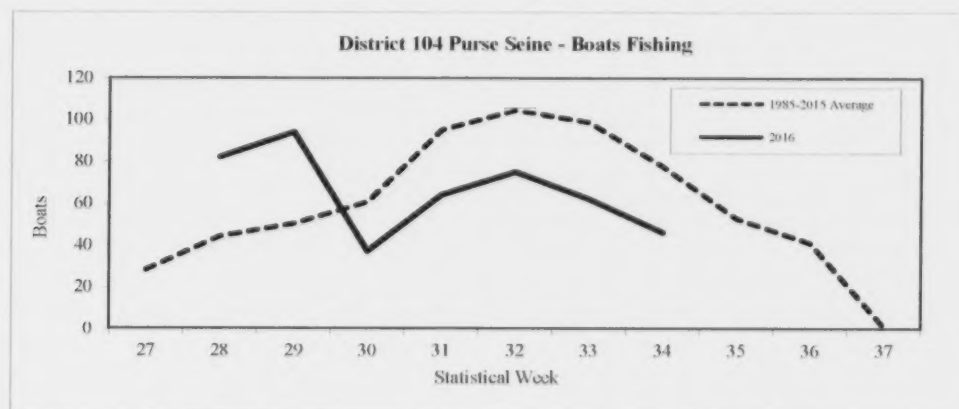


Figure 2. – Number of boats fishing by week in the District 104 purse seine fishery, 2016.

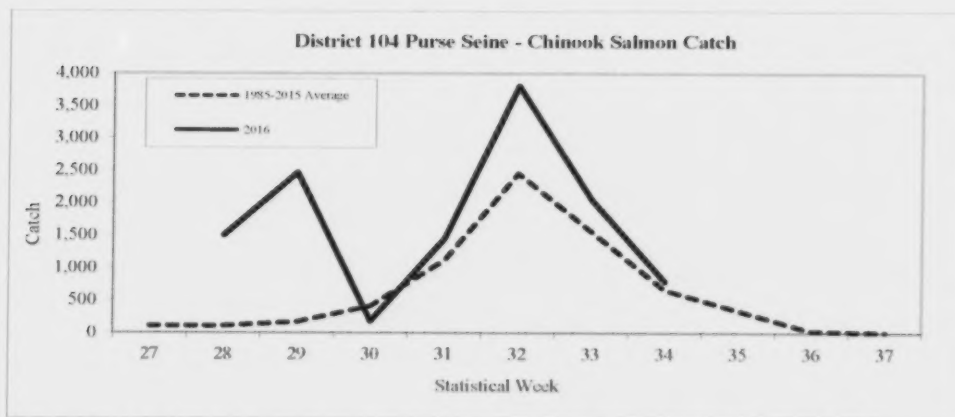


Figure 3. – Chinook salmon harvest by week in the District 104 purse seine fishery, 2016.

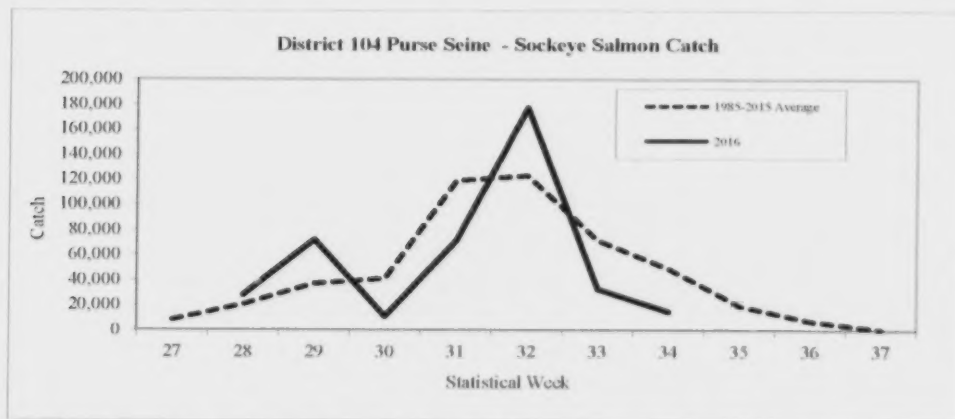


Figure 4. – Sockeye salmon harvest by week in the District 104 purse seine fishery, 2016.

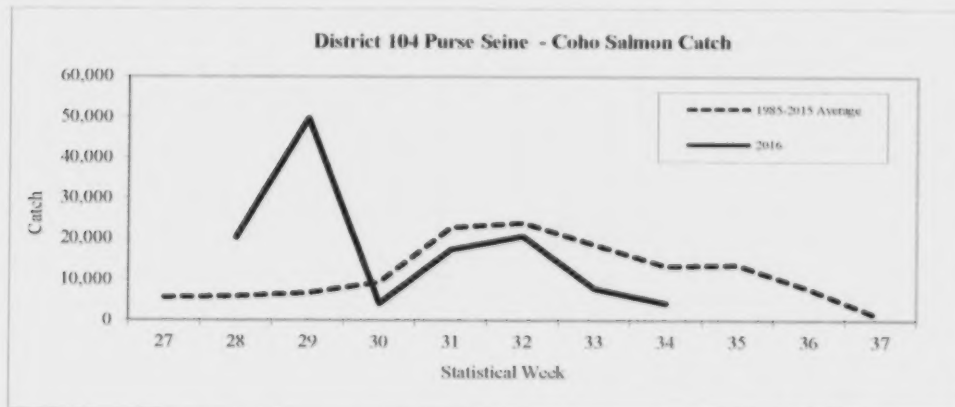


Figure 5. – Coho salmon harvest by week in the District 104 purse seine fishery, 2016.

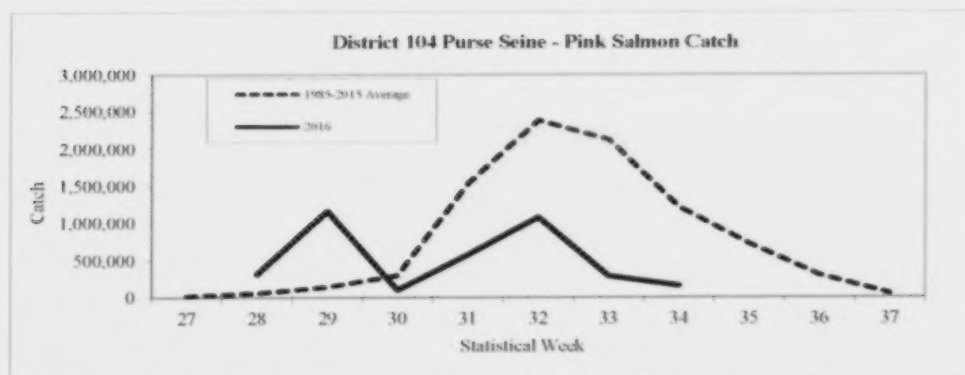


Figure 6. – Pink salmon harvest by week in the District 104 purse seine fishery, 2016.

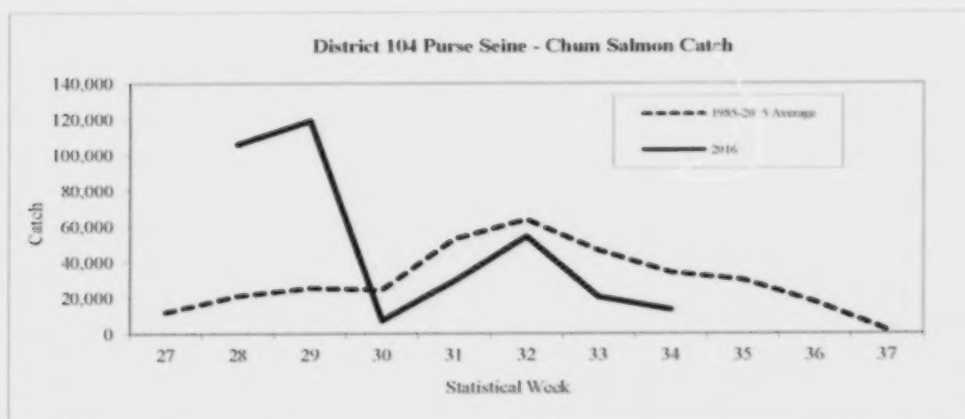


Figure 7. – Chum salmon harvest by week in the District 104 purse seine fishery, 2016.

District 101 Drift Gillnet Fishery

The 2009 PST agreement calls for abundance based management of the District 101 (Tree Point) drift gillnet fishery. The agreement specifies a harvest of 13.8 percent of the AAH of the Nass River sockeye run. The AAH is calculated as the total run of Nass sockeye salmon minus either the escapement requirement of 200,000 or the actual in-river escapement, whichever is less. The return of Nass sockeye salmon was forecast at 679,000 in 2016 which, minus an escapement goal of 200,000, would result in an AAH of about 479,000. Using this forecast, the 2016 allowable harvest in the District 101 drift gillnet fishery was approximately 66,102 Nass River sockeye salmon.

The District 101 drift gillnet fishery opens by regulation on the third Sunday in June, which was June 19 in 2016. During the early weeks of the fishery, management is based on the run strength of Alaska wild stock chum and sockeye salmon and on the run strength of Nass River sockeye salmon. Beginning in the third week of July, when pink salmon stocks begin to enter the fishery in large numbers, management emphasis shifts by regulation to that species. By regulation, the District 101 Pink Salmon Management Plan begins the third Sunday in July and sets gillnet fishing time in this district in relation to the District 101 purse seine fishing time. Beginning in Week 35 (August 21) management was based on the strength of wild stock fall chum and coho salmon.

The District 101 drift gillnet fishery opened Sunday June 19 (week 26) in 2016. The number of days the fishery was open was near average all season (Figure 8), but the number of boats fishing during weekly openings was below average throughout the season (Figure 9). The total number of individual boats fishing

during the season was 75, which was 69% of the 1985-2015 average of 109 boats. A total of 39,912 sockeye salmon were harvested, which was only 33% of the 1985-2015 average of 119,957 fish and was the third lowest harvest since the inception of the Pacific Salmon Treaty (Table 3). Harvests of sockeye salmon were below treaty period averages until late in the season (Figure 10). The cumulative sockeye salmon harvest prior to the initiation of the PSMP in Week 30 was 14,686 fish, or about 38% of the season's total sockeye salmon harvest. The final number of Nass River sockeye harvested at Tree Point will not be available until catch, escapement, and stock composition estimates are finalized for the 2016 season. In past years approximately 65% of the District 101 gillnet sockeye harvest has been of Nass River origin, therefore we would anticipate that approximately 25,900 Nass River sockeye may have been harvested in the District 101 gillnet fishery in 2016.

Coho salmon harvests were near average for most weeks of the season and the total harvest of 46,393 fish was 94% of the treaty period average (Figure 11). Pink salmon harvests were near or above average all season and the total harvest of 561,021 fish was 110% of average (Figure 12). Chum salmon harvests were near or below average in most weeks of the fishery and the total harvest of 273,608 fish was 90% of average (Figure 13). Chinook salmon harvests were near average throughout the season (Figure 14).

Table 3. – Weekly harvest and effort in the Alaska District 101 commercial drift gillnet fishery, 2016.

Week	Start	Chinook	Sockeye	Coho	Pink	Chum	Boats	Hours
	Date							
26	6/19	336	3,882	481	162	19,767	42	96
27	6/26	311	4,138	783	10,312	26,722	45	96
28	7/3	153	3,286	2,121	34,097	35,428	57	96
29	7/10	103	3,380	1,390	48,067	24,022	48	96
30	7/17	36	3,200	629	84,243	15,050	40	96
31	7/24	11	3,945	995	83,336	22,811	44	96
32	7/31	24	2,581	1,248	69,669	10,590	43	120
33	8/7	37	7,257	1,896	100,799	9,805	41	120
34	8/14	29	4,199	2,247	76,026	7,572	43	96
35	8/21	96	2,210	4,258	43,931	17,347	41	96
36	8/28	25	810	5,857	8,919	20,430	39	96
37	9/4	16	899	10,416	1,356	24,924	44	96
38	9/11	6	109	6,532	101	21,585	42	96
39	9/18	7	10	4,786	3	12,248	32	96
40	9/25	1	6	2,754	0	5,307	22	96
Total		1,191	39,912	46,393	561,021	273,608	75	1,488
1985-2015 Avg.		1,495	119,958	49,580	508,481	305,000	110	1,364

Table 4. – Sockeye salmon harvest in the Alaska District 101 gillnet fishery, 1985 to 2016, and comparison of harvest and effort (boats, hours, and boat-hours) between weeks 26 and 35 when sockeye salmon are most abundant in this district.

Year	Total Sockeye Harvest	Catch and Effort between Weeks 26-35			
		Sockeye Harvest	Individual Permits Fished	Total Hours Open	Boat- Hours ¹
1985	173,100	159,021	155	1,032	106,209
1986	145,699	143,286	201	960	109,490
1987	107,503	106,638	178	615	64,104
1988	116,115	115,888	192	756	93,072
1989	144,936	130,024	178	1,023	117,465
1990	85,691	78,131	159	840	70,421
1991	131,492	123,508	136	984	80,064
1992	244,649	243,878	118	1,080	94,159
1993	394,098	390,299	149	1,032	102,814
1994	100,377	98,725	144	984	74,408
1995	164,294	151,131	140	1,008	82,512
1996	212,403	175,569	130	1,104	86,108
1997	169,474	152,662	138	1,008	81,672
1998	160,506	159,307	124	1,044	87,358
1999	160,028	158,268	118	1,032	80,424
2000	94,651	94,399	95	912	49,488
2001	80,041	62,129	76	1,020	46,874
2002	120,353	106,360	76	1,008	42,528
2003	105,263	96,921	71	1,104	44,008
2004	142,357	141,395	61	1,104	42,400
2005	79,725	75,875	70	1,104	40,864
2006	62,770	53,048	48	840	28,265
2007	66,822	50,642	56	1,032	33,713
2008	34,113	30,672	54	936	31,961
2009	69,859	69,325	65	1,080	43,432
2010	62,680	61,987	68	1,008	45,135
2011	88,618	87,744	87	840	47,627
2012	62,506	40,518	85	1,008	43,695
2013	54,575	45,413	92	1,104	59,437
2014	55,828	49,722	73	1,095	44,551
2015	28,155	27,365	71	912	35,946
2016	39,912	38,078	71	1,008	44,640
Average 1985-2015	119,957	112,253	110	987	64,845

¹Boat-hours equals the sum of all weekly estimates of boat-hours: boats fished multiplied by open hours. Boat-hours does not equal individual permits fished multiplied by total open hours.

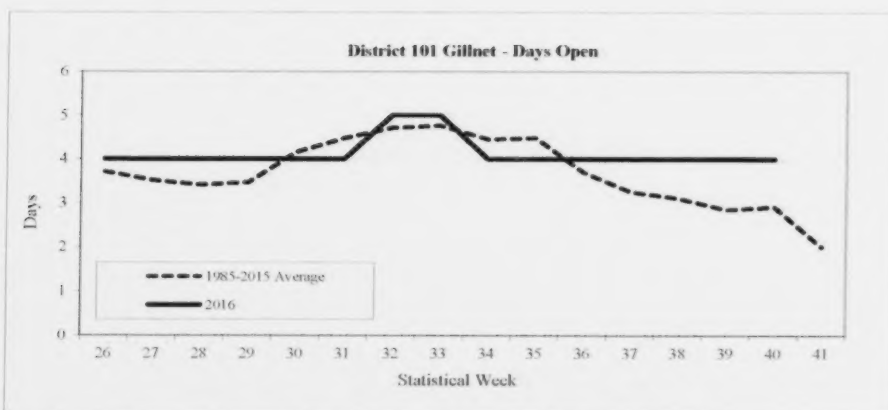


Figure 8. – Days open by week in the District 101 drift gillnet fishery, 2016.

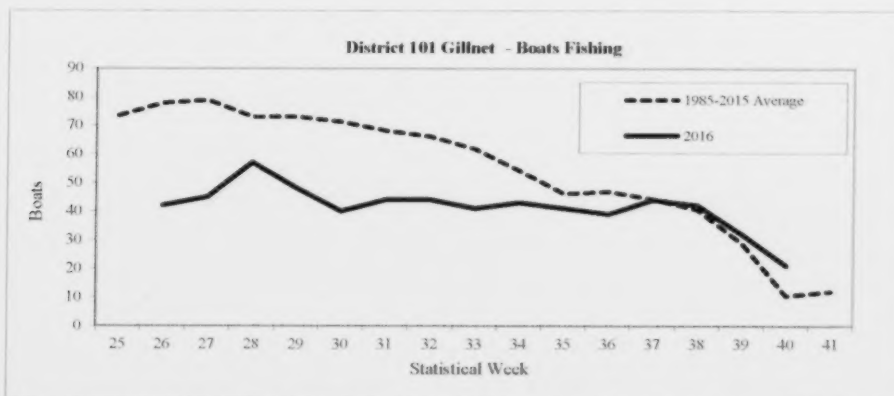


Figure 9. – Number of boats fishing by week in the District 101 drift gillnet fishery, 2016.

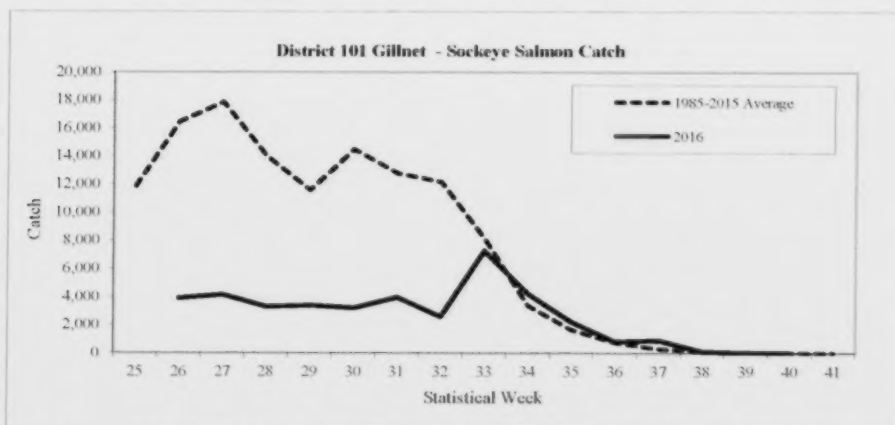


Figure 10. – Sockeye salmon harvest by week in the District 101 drift gillnet fishery, 2016

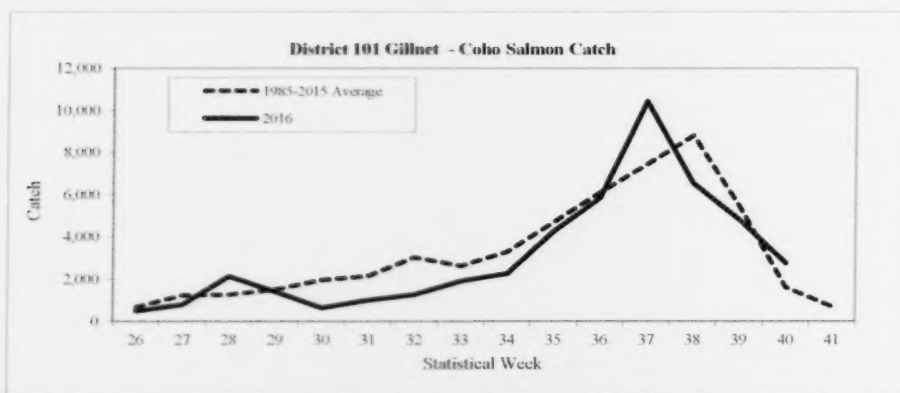


Figure 11. – Coho salmon harvest by week in the District 101 drift gillnet fishery, 2016.

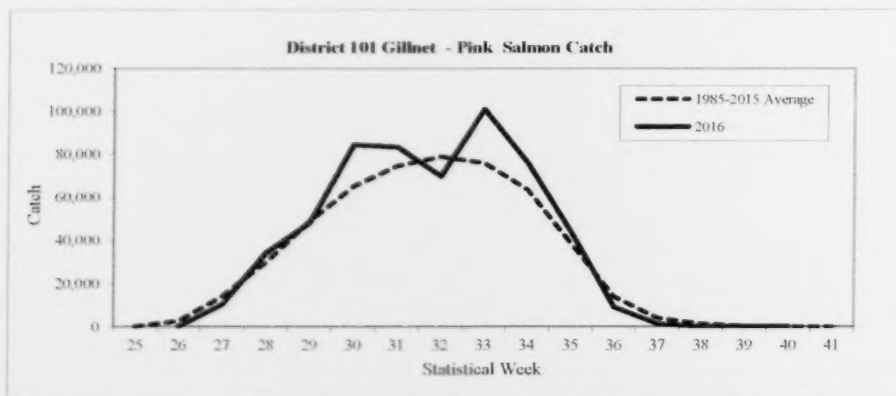


Figure 12. – Pink salmon harvest by week in the District 101 drift gillnet fishery, 2016.

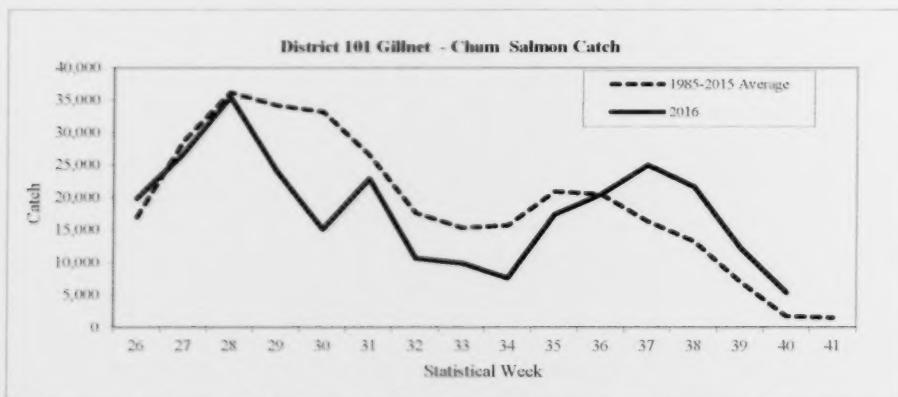


Figure 13. – Chum salmon harvest by week in the District 101 drift gillnet fishery, 2016.

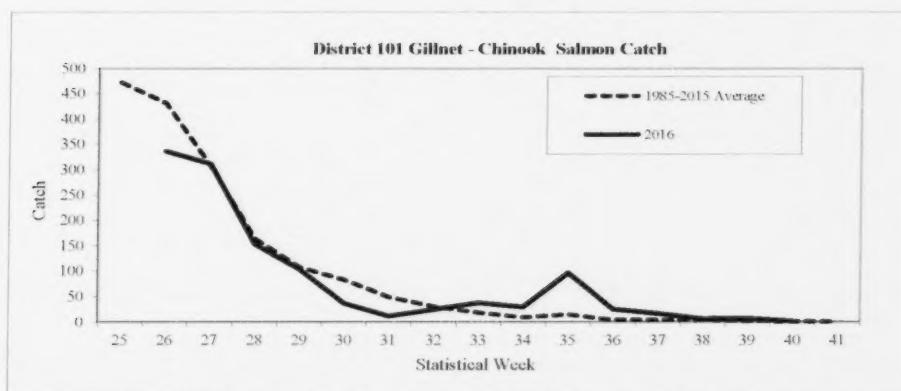


Figure 14. – Chinook salmon harvest by week in the District 101 drift gillnet fishery, 2016.

Pink, Sockeye, and Chum Salmon Escapements

Escapements of pink salmon were generally strong throughout southern Southeast Alaska, but were below average throughout much of northern Southeast Alaska inside waters. The total 2016 Southeast Alaska pink salmon escapement index of 10.08 million index fish ranked 27th since 1960. Biological escapement goals were met in the Southern Southeast and Northern Southeast Outside subregions, but escapements in the Northern Southeast Inside Subregion were below goal in 2016 (Table 5). On a finer scale, escapements met or exceeded management targets for 8 of 15 districts in the region and for 30 of the 46 pink salmon stock groups in Southeast Alaska. The Southern Southeast Subregion includes all of the area from Sumner Strait south to Dixon Entrance (Districts 101–108). The escapement index value of 6.6 million was within the escapement goal range of 3.0 to 8.0 million index fish. The pink salmon harvest of 16.3 million in the Southern Southeast Subregion was 75% of the recent 10-year average. The overall Southeast Alaska pink salmon harvest of 18.4 million fish was approximately 50% of the 2006–2015 average of 38.1 million.

Table 5. – Southeast Alaska 2016 pink salmon escapement indices and biological escapement goals by subregion (in millions).

Subregion	2016 Pink Salmon Index	Biological Escapement Goal	
		Lower Bound	Upper Bound
Southern Southeast	6.60	3.0	8.0
Northern Southeast Inside	1.78	2.5	6.0
Northern Southeast Outside	1.70	0.75	2.50
Total	10.08		

Sockeye salmon returns throughout Southeast Alaska were mixed in 2016, and escapement targets were met for 11 of the 13 sockeye salmon systems with formal escapement goals. The Hugh Smith Lake adult sockeye salmon escapement was 12,900, which was within the optimal escapement goal range of 8,000 to 18,000 adult sockeye salmon. Based on the expanded peak foot survey count, the escapement of sockeye salmon into McDonald Lake was estimated to be 15,600 fish, which was far below the sustainable escapement goal range of 55,000 to 120,000.

For summer-run chum salmon, lower bound sustainable escapement goals were met for two of the three subregions in Southeast Alaska. In Southeast Alaska, runs are broken into summer and fall runs. The Southern Southeast summer-run chum salmon stock group is composed of an aggregate of 15 summer-run chum salmon streams on the inner islands and mainland of southern Southeast Alaska, from Sumner Strait south to Dixon entrance, with a sustainable escapement goal of 62,000 index spawners (based on the

aggregate peak survey to all 15 streams). Summer chum salmon escapements were above average at most index streams in southern Southeast Alaska, and the index of 90,000 in 2016 was well above goal (Figure 15).

Cholmondeley Sound is the only area in southern Southeast Alaska with a formal escapement goal for fall chum salmon. Fall chum salmon runs are monitored in Cholmondeley Sound through aerial surveys at Disappearance and Lagoon creeks. The escapement index of 30,000 just reached the lower bound of the sustainable escapement goal range of 30,000 to 48,000 index spawners (based on the aggregate peak survey to both streams; Figure 16).

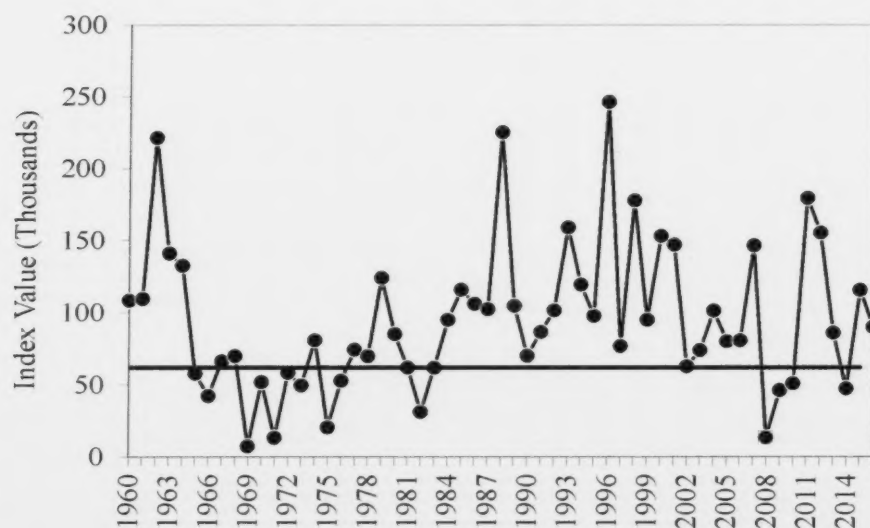


Figure 15. – Observed escapement index value by year (solid circles) and the sustainable escapement goal threshold of 62,000 index spawners (horizontal line) for wild summer-run chum salmon in the Southern Southeast Subregion, 1980–2016.

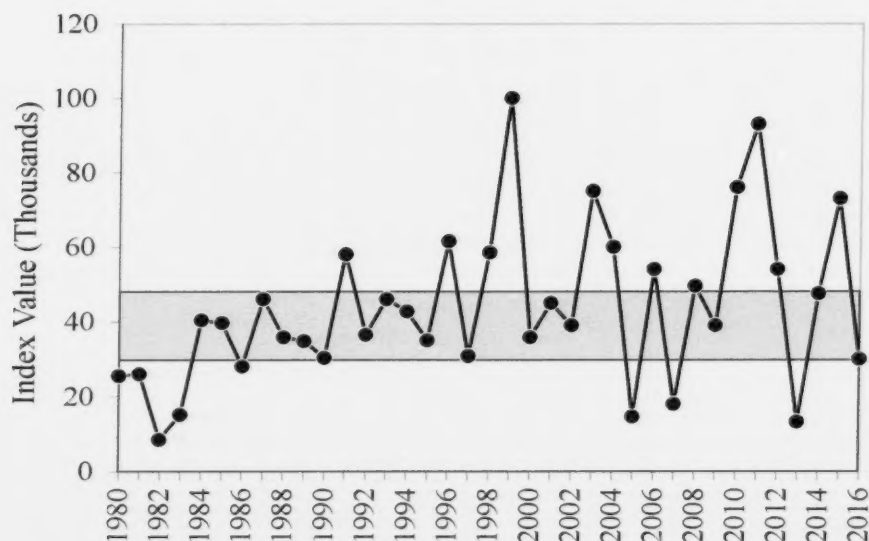


Figure 16. – Observed escapement index value by year (solid circles) and the sustainable escapement goal range of 30,000 to 48,000 index spawners (shaded area) for Cholmondeley Sound fall-run chum salmon, 1980–2016.

TRANSBOUNDARY AREA FISHERIES

Stikine River Area Fisheries

The initial preseason forecast for large Chinook salmon returning to the Stikine River was approximately 33,900 fish, which allowed for directed Chinook salmon fisheries in District 108. Since terminal Chinook salmon run projections were not available early in the season, the management of District 108 commercial fisheries was based on the preseason forecast and then performance in marine and inriver fisheries. The postseason run reconstruction for large Chinook salmon returning to the Stikine River was 15,287 fish, with an escapement of 10,343 fish, which was below the goal range of 14,000 to 28,000 fish.

The 2016 preseason forecast for sockeye salmon returning to the Stikine River was 223,000 fish, which was well above the recent 10-year average of 172,000 fish. The 2016 forecast included approximately 87,000 wild Tahltan (39%), 42,000 enhanced Tahltan (19%), 38,000 enhanced Tuya (17%), and 56,000 mainstem (25%) sockeye salmon. Due to the near identical return timing of the Tahltan Lake and Tuya Lake stocks, any open fishing periods in District 108, and to a lesser extent in District 106, are determined by the inseason abundance estimate of the Tahltan Lake return. Typically, the Tahltan Lake and Tuya Lake sockeye salmon run timing peaks in statistical week 27 (June 26–July 2) through the Districts 106 and 108 fisheries. During an average Tahltan Lake run significant numbers of sockeye salmon could be present as early as statistical week 25 (June 12–18) and as late as statistical week 31 (July 24–30). The 2016 returns of local area sockeye salmon stocks were expected to be average.

Directed commercial fishing for Stikine River Chinook salmon occurred during the first three weeks of May in District 108. The directed drift gillnet fishery began May 2 for a 24 hour fishing period and continued for one day a week for the following two weeks. Effort was generally low and harvests were poor each opening. The District 108 directed troll fishery is linked to drift gillnet fishery. As a result the troll fishery was open three days a week for the first three weeks of May. Effort and harvest in the troll fishery were variable from week to week. Due to the poor performance of both inriver and marine catches, directed commercial fishing was closed until the beginning of the sockeye salmon fishery.

The District 106 and 108 drift gillnet sockeye salmon fisheries opened Monday, June 13 (week 25). The initial opening in both districts was limited to two days and area was limited in District 108 for Stikine River Chinook salmon conservation. The following week, both districts were opened for an initial three days and again area was limited in District 108. A two-day midweek occurred in District 108 as it was apparent from both inriver catches and marine catches that the Stikine River sockeye run was developing as forecasted if not better. Beginning in week 27, area restrictions were relaxed in District 108 and fishing time was again extensive with 5 days as it was apparent that the Tahltan River component of the run was higher than the preseason forecast. District 106 open time remained at three days a week. Open time in District 106 was three to four days a week for the remainder of the sockeye salmon fishery and open time in District 108 was three to five days a week as sockeye salmon abundance estimates continued to increase (Tables 6 and 7). The preliminary postseason assessment for Stikine River sockeye salmon was 253,275 fish and included 104,504 wild Tahltan (41%), 50,661 enhanced Tahltan (20%), 35,271 Tuya (14%), and 62,666 Mainstem (25%) fish.

Districts 106 and 108 were managed based on pink salmon abundance during the month of August. Three day openings occurred in weeks 32 through 34 and the final opening for pink salmon management was for two days in week 35 (Figures 17 and 24). In early September, management focus switched to coho salmon and the fisheries continued to be open for two or three days weekly through the remainder of the fisheries.

The number of permits participating in the District 106 weekly openings was above average in many weeks (Figure 18), but the seasonal number of permits fished was 91% of average (Table 6). The number of permits participating in the District 108 fishery was well below average during the directed Chinook salmon fishery in May, but was above average in many weeks of the sockeye salmon fishery; the seasonal number of permits fished was right at the recent 10-year average of 141 permits (Figure 25; Table 7).

During the 2016 season, 358,309 pink salmon, 106,649 sockeye salmon, 130,236 chum salmon, 122,101 coho salmon, and 2,094 Chinook salmon were harvested in the District 106 drift gillnet fishery (Table 6). Chinook salmon harvests were generally above average from late June through mid-July (Figure 19) and were comprised of 35% Alaska hatchery origin fish. Sockeye salmon harvests were below average in the first three weeks of the season, but then increased to above average from early July until mid-August (Figure 20). The total sockeye salmon harvest of 106,649 fish was 124% of the recent 10-year average and 21,598 were estimated to be of Stikine River origin. Harvests of coho salmon were below average in most weeks until mid-September. The overall harvest of 122,101 coho salmon was 85% of the recent 10-year average of 143,509 fish (Figure 21). Pink salmon harvests were above average from the second week of July through early August (Figure 22), and the overall harvest of 358,309 fish was 135% of the recent 10-year average. Chum salmon harvests were below average in most weeks and the overall harvest was 74% of average (Figure 23).

During the 2016 season, 35,250 pink salmon, 70,143 sockeye salmon, 200,653 chum salmon, 22,146 coho salmon, and 10,024 Chinook salmon were harvested in the District 108 drift gillnet fishery (Table 7). Only 118 Chinook salmon were harvested in the directed fishery in May, but the harvest was above average in most weeks from mid-June to late July and was comprised of 50% Alaska hatchery origin fish for the season (Figure 26). An estimated 1,707 Stikine River large Chinook salmon were harvested in District 108 from weeks 18 through 29 by subsistence, sport, troll, and drift gillnet fisheries. Sockeye salmon harvests were well above average during the peak weeks of the season (Figure 27) and the total sockeye salmon harvest of 70,143 fish was 188% of the recent 10-year average. An estimated 59,613 fish, or 85% of the harvest, were estimated to be Stikine River sockeye salmon. The overall coho salmon harvest of 22,146 fish was below the recent 10-year average of 30,725 fish (Table 7, Figure 28). Pink salmon harvests were near or below average most of the season and the overall harvest was 75% of the recent 10-year average (Figure 29). Chum salmon harvests were near or above average throughout the season and the overall harvest of 200,653 fish was 127% of the recent 10-year average (Figure 30).

Table 6. – Weekly salmon harvest in the Alaskan District 106 commercial drift gillnet fisheries, 2016. Harvests do not include Blind Slough terminal area harvests.

Week	Start Date	Chinook	Sockeye	Coho	Pink	Chum	Boats	Days	Boat Days
25	13-Jun	191	1,235	512	44	2,203	31	2	62
26	20-Jun	178	5,836	2,509	238	2,185	45	3	135
27	26-Jun	338	9,536	4,497	2,610	6,501	54	3	162
28	3-Jul	301	16,025	6,831	12,314	11,576	55	3	165
29	10-Jul	209	14,842	6,317	38,366	26,171	56	4	224
30	17-Jul	170	16,951	5,639	62,332	13,377	64	4	256
31	24-Jul	115	14,196	4,212	76,520	16,777	64	3	192
32	31-Jul	214	15,539	6,130	90,697	17,910	76	3	228
33	7-Aug	174	5,700	3,503	37,148	5,017	52	3	156
34	14-Aug	29	4,039	6,856	22,866	5,006	66	3	198
35	21-Aug	73	1,809	5,586	8,510	3,036	73	2	146
36	28-Aug	13	592	6,732	5,100	3,806	55	2	110
37	4-Sep	1	286	7,945	1,364	4,240	61	2	122
38	11-Sep	12	53	21,468	191	5,561	69	2	138
39	18-Sep	26	10	19,451	9	4,614	74	3	222
40	25-Sep	27	0	10,239	0	1,954	32	3	96
41	2-Oct	23	0	3,674	0	302	15	2	30
Total		2,094	106,649	122,101	358,309	130,236	138	47	2,641
2006-2015 Average		2,220	86,054	143,510	265,844	174,986	151	48	2,692
2016 as % of Average		94%	124%	85%	135%	74%	91%	98%	98%

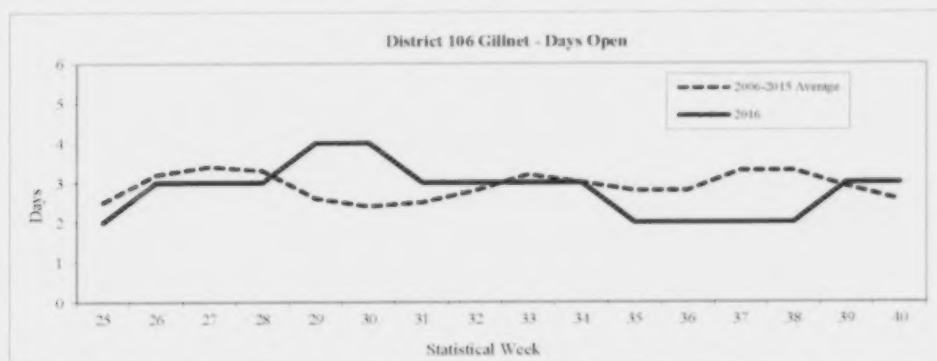


Figure 17. – Days open by week in the District 106 drift gillnet fishery, 2016.

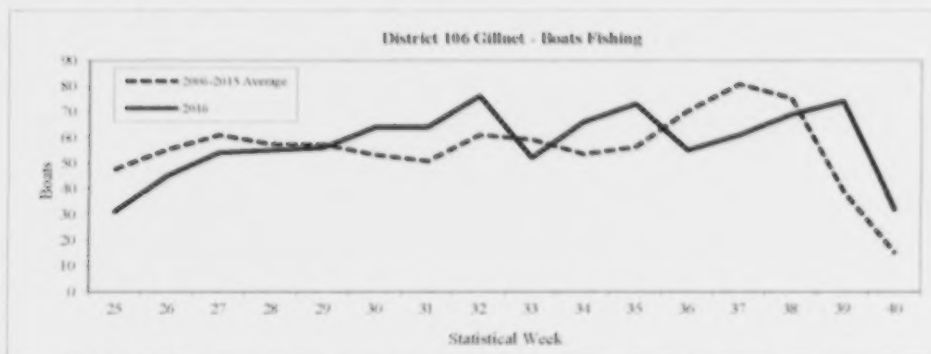


Figure 18. – Number of boats fishing by week in the District 106 drift gillnet fishery, 2016.

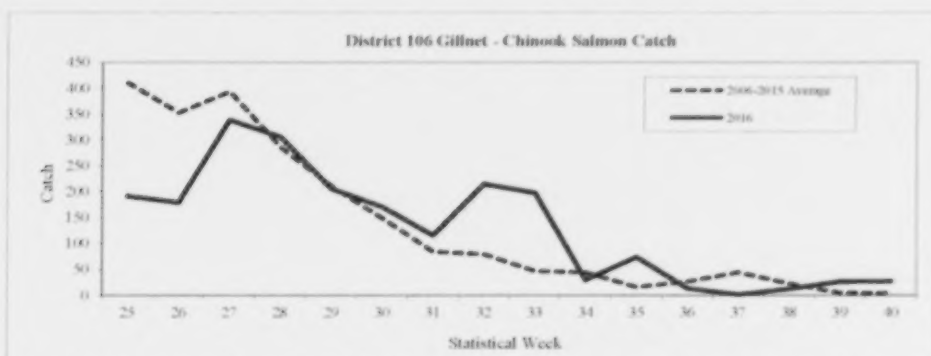


Figure 19. – Chinook salmon harvest by week in the District 106 drift gillnet fishery, 2016.

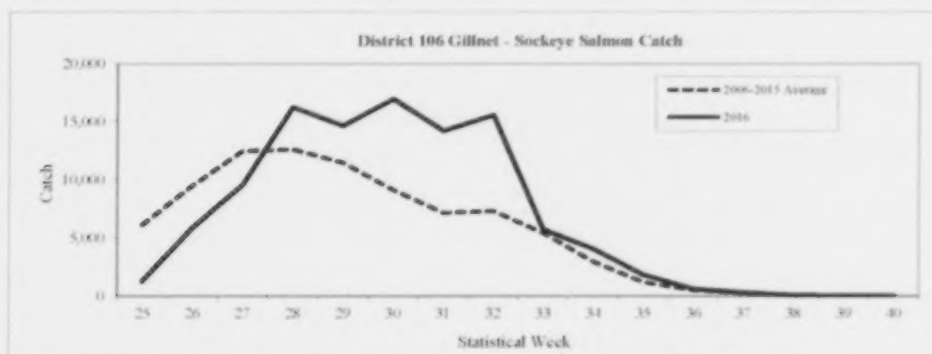


Figure 20. – Sockeye salmon harvest by week in the District 106 drift gillnet fishery, 2016.

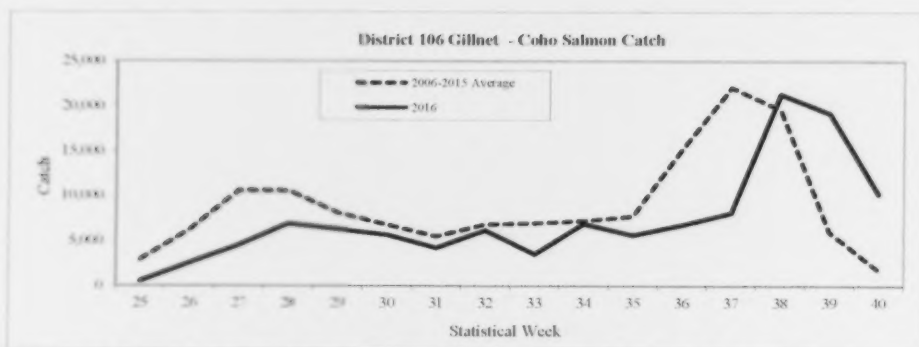


Figure 21. – Coho salmon harvest by week in the District 106 drift gillnet fishery, 2016.

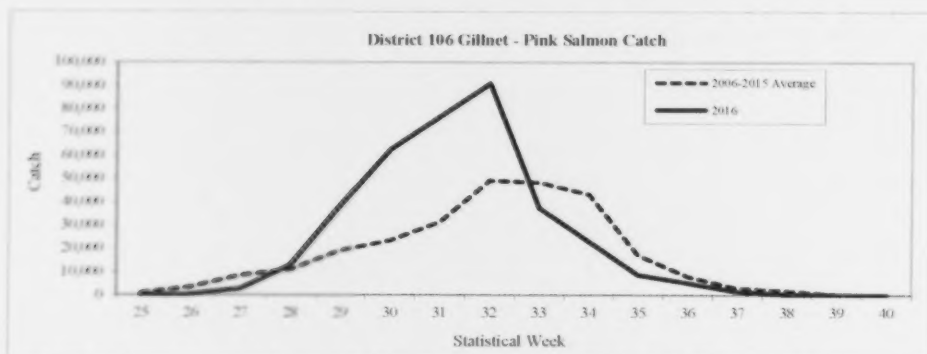


Figure 22. – Pink salmon harvest by week in the District 106 drift gillnet fishery, 2016.

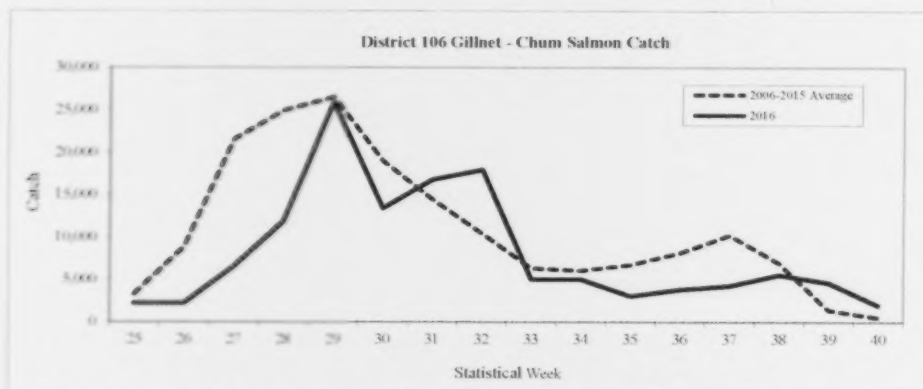


Figure 23. – Chum salmon harvest by week in the District 106 drift gillnet fishery, 2016.

Table 7. – Weekly salmon harvest and effort in the Alaskan District 108 traditional commercial drift gillnet fishery, 2016a.

Week	Start Date	Chinook	Sockeye	Coho	Pink	Chum	Boats	Days	Boat Days
19	2-May	8	0	0	0	0	4	1	4
20	9-May	33	0	0	0	0	11	1	11
21	16-May	77	0	0	0	0	12	1	12
25	13-Jun	1,495	444	33	3	364	50	2	100
26	20-Jun	2,581	11389	469	43	3103	74	5	250
27	26-Jun	2,544	22,283	961	245	5,902	85	5	347
28	3-Jul	1,460	17,655	752	1,544	30,463	76	5	297
29	10-Jul	858	8,382	509	4,463	27,325	58	5	230
30	17-Jul	576	5,146	609	7,650	38,166	68	4	272
31	24-Jul	139	1,654	626	7,547	40,069	63	3	189
32	31-Jul	138	1,817	947	6,196	38,325	59	3	183
33	7-Aug	63	587	787	5,228	11,179	38	3	114
34	14-Aug	23	524	1,810	1,733	3,697	36	3	111
35	21-Aug	2	161	1,163	519	1,158	22	2	44
36	28-Aug	5	62	2,167	73	250	24	2	48
37	4-Sep	3	22	1,579	6	121	17	2	34
38	11-Sep	10	16	3,083	0	204	19	2	38
39	18-Sep	2	1	2,141	0	63	12	3	30
40	25-Sep	6	0	3,065	0	236	12	3	36
41	2-Oct	1	0	1,445	0	28	7	2	14
Total		10,024	70,143	22,146	35,250	200,653	141	58	2,364
2006-2015 Average		11,332	37,376	30,724	46,758	158,200	141	53	2,160
2016 as % of Average		88%	188%	72%	75%	127%	100%	109%	109%

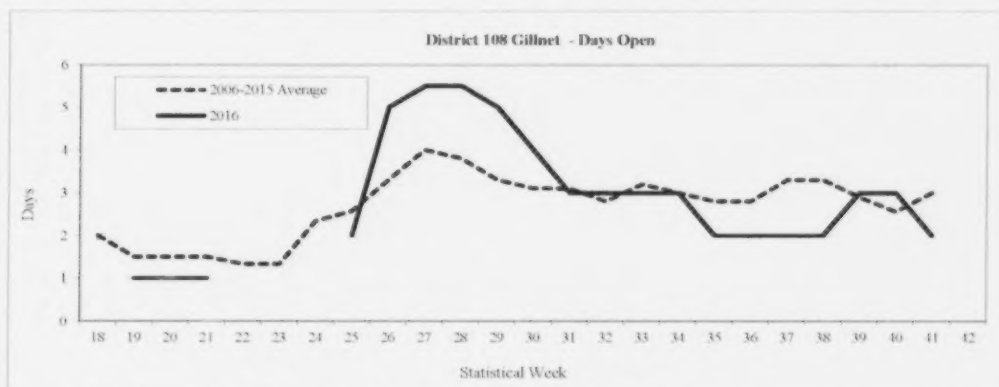


Figure 24. – Days open by week in the District 108 drift gillnet fishery, 2016.

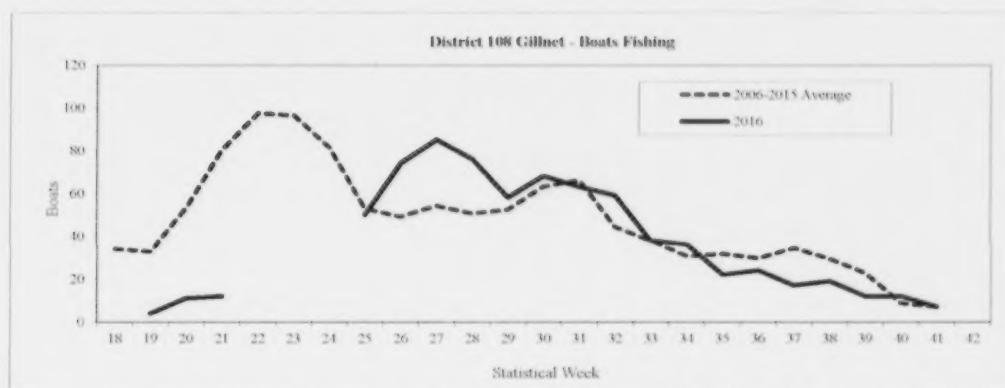


Figure 25. – Number of boats fishing by week in the District 108 drift gillnet fishery, 2016.

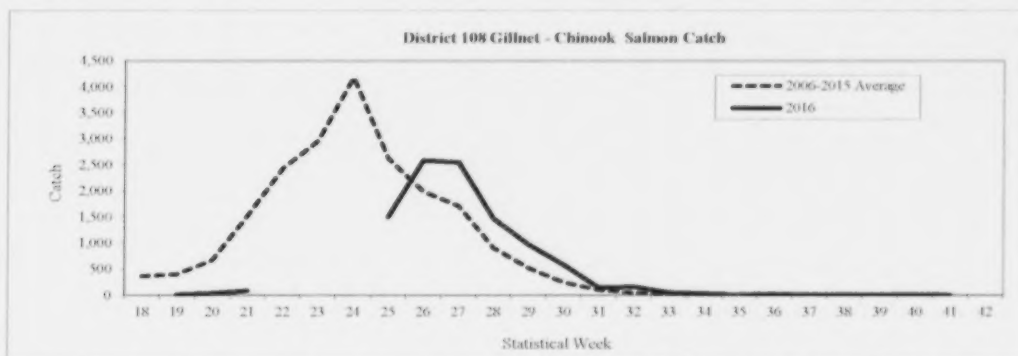


Figure 26. – Chinook salmon harvest by week in the District 108 drift gillnet fishery, 2016.

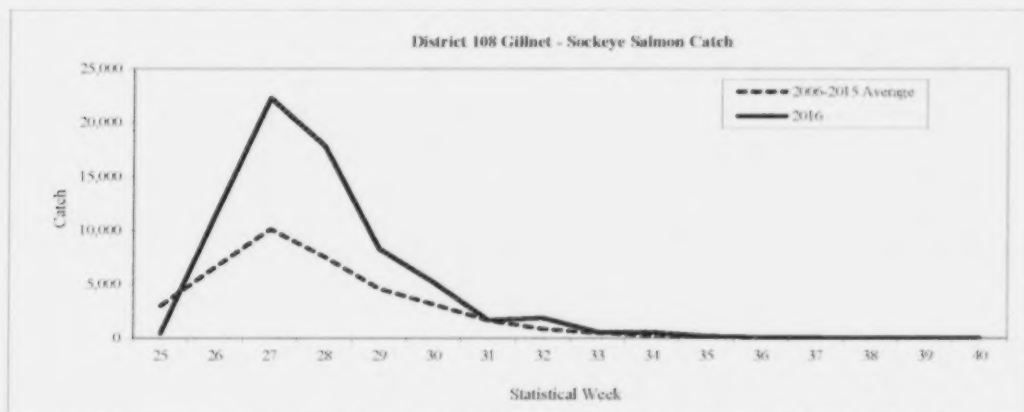


Figure 27. – Sockeye salmon harvest by week in the District 108 drift gillnet fishery, 2016.

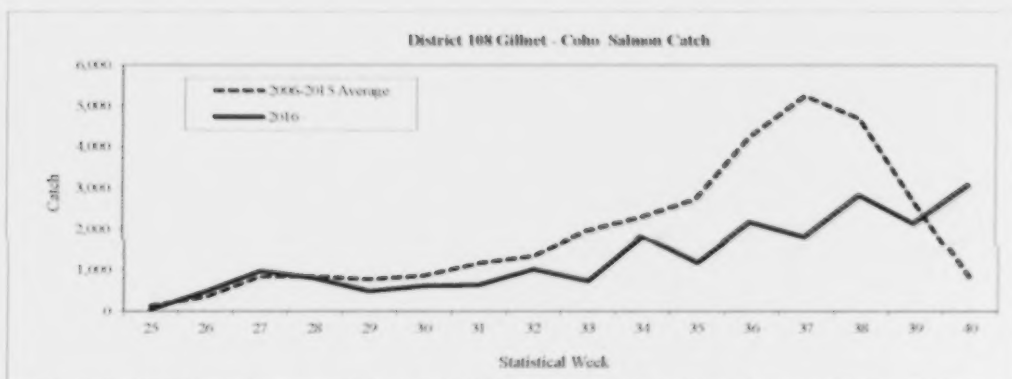


Figure 28. – Coho salmon harvest by week in the District 108 drift gillnet fishery, 2016.

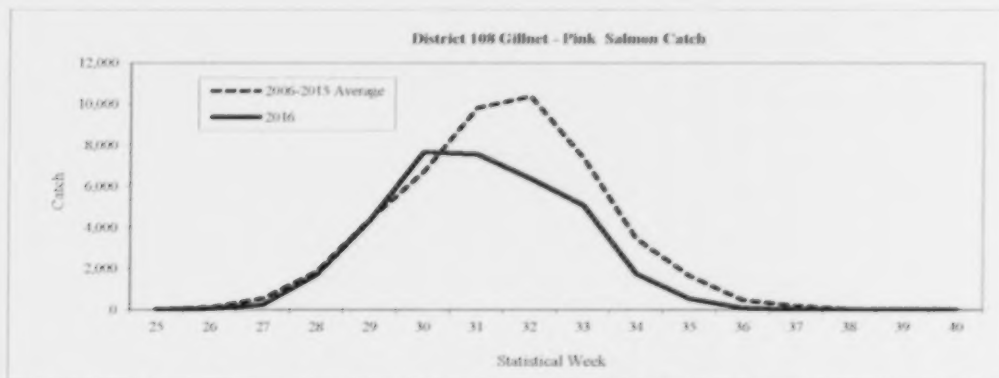


Figure 29. – Pink salmon harvest by week in the District 108 drift gillnet fishery, 2016.

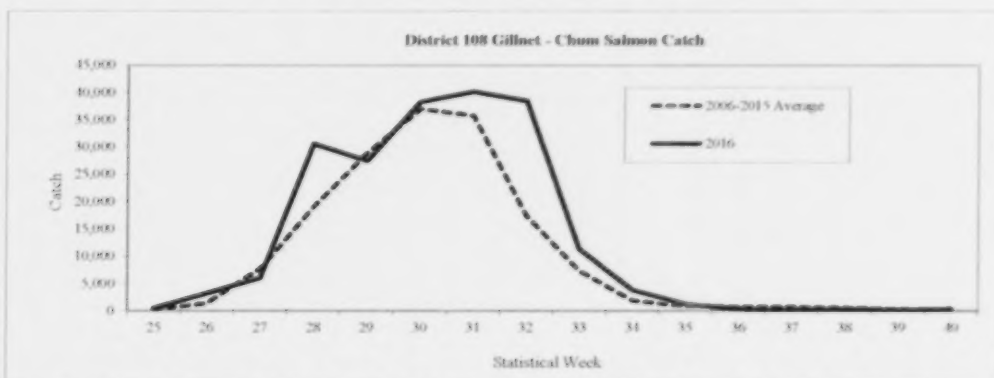


Figure 30. – Chum salmon harvest by week in the District 108 drift gillnet fishery, 2016.

Taku River Area Fisheries

The traditional drift gillnet fishery in District 111 targets salmon stocks bound for the trans-boundary Taku River. This fishery is managed for Chinook salmon from week 18 to week 25 when there are sufficient fish surplus to escapement to provide for a fishery. From week 26 to week 33 the fishery is managed for Taku River sockeye salmon, and from week 34 to week 42 for Taku River coho salmon. Also harvested in this fishery are salmon bound for Stephens Passage and Port Snettisham streams as well as enhanced Chinook, sockeye, coho and chum salmon from Douglas Island Pink and Chum, Inc. (DIPAC) hatchery releases. The

traditional fishery does not include harvests from the Speel Arm Special Harvest Area (SHA) inside Port Snettisham.

The escapement goal range for Taku River large Chinook salmon is 19,000 to 36,000 fish with a point goal of 25,500 fish. In years of high abundance, directed Chinook salmon fisheries can be implemented to harvest runs in excess of escapement needs. The 2016 preseason terminal run forecast for the Taku River of 29,200 large Chinook salmon did not allow for any directed Chinook salmon fisheries in District 111.

The escapement goal range for Taku River sockeye salmon is 71,000 to 80,000 fish, with a point goal of 75,000 fish. The 2016 Taku River sockeye salmon forecast was for an above average 210,000 fish, based on the average of Canadian stock-recruit and sibling forecasts. DIPAC forecast 254,000 enhanced sockeye salmon returning through District 111 waters to Port Snettisham.

An escapement goal range of 50,000 to 90,000 Taku River coho salmon with a point goal of 70,000 fish was adopted in early 2015. The U.S. management intent in 2016 was to pass a minimum of 75,000 coho salmon above the border, providing for escapement and a 5,000 fish Canadian assessment fishery. The preseason forecast was for an average inriver run of 127,000 coho salmon in the Taku River, and DIPAC forecast a return of 81,000 enhanced coho salmon from releases in Gastineau Channel. For 2016, DIPAC forecast returns totalling 893,000 enhanced chum salmon to Gastineau Channel and Limestone Inlet, which was below the recent average.

The traditional drift gillnet fishery in District 111 began on Sunday, June 19, 2016 (week 26). The initial drift gillnet opening of the season in District 111 was for two days, with a significant area restriction intended to minimize harvest of Taku River Chinook salmon abundance. Effort for the opening was 29 boats, which was well below the ten-year average of 51 boats. The sockeye salmon harvest was approximately half of the recent ten-year average and the chum salmon harvest was only 17% of the recent ten-year average (Figures 34 and 37). A total of 134 Chinook salmon were harvested, which was well below average for the week (Figure 33).

From early July through early August (weeks 27–32) effort in the District 111 drift gillnet fishery was generally below average, with a peak of 103 boats fishing in week 30 (Figure 32). Harvests of sockeye salmon were below average through mid-July, but then improved and the peak weekly catch of 47,511 in week 32 was nearly three times average for the week. Sockeye salmon harvests remained above average through week 36 (Figure 34). Weekly chum salmon catches were generally below average and approximately 446,000 fish were harvested from late June to mid-August (Figure 37). Most of the summer-run chum salmon harvest in District 111 consists of DIPAC hatchery fish returning to release sites in Gastineau Channel and Limestone Inlet. Chinook salmon harvests were below average through the tail end of the run and few fish were caught after mid-July (Figure 33). Pink salmon harvests were well below average through early August (Figure 36).

For the remainder of August and September (weeks 33–41), overall effort in the fishery was above or near average in most weeks and the fishery was open for three or four days of fishing weekly (Figure 31). The weekly number of boats fishing was near or above average from mid-August through late September (Figure 32). Harvests of coho salmon were below average from mid-August to late September (Figure 35). Pink salmon harvests were below average in all but week 33 (Figure 36). Chum salmon harvests were below the recent ten-year average from week 34 through 38. Although the chum salmon harvests were small in the final two weeks of the fishery, they were well above average for the statistical weeks (Figure 37).

A number of Chinook salmon stocks are known to contribute to the Juneau area sport fishery, including those from the Taku, Chilkat, and King Salmon rivers, and local hatchery stocks, but the major contributor of mature wild fish is believed to be the Taku River. Preliminary estimates indicate that approximately 635 of the Chinook salmon harvested in the Juneau sport fishery from weeks 16 through 28 were of Taku River origin (based on genetic stock identification analysis). The preliminary District 111 harvest of Taku River

large Chinook salmon during the accounting period was 159 fish in the drift gillnet fishery, 635 in the sport fishery, and an estimated 30 in the personal use fishery, for a total of 824. Harvests of Taku River large Chinook salmon in these fisheries from week 29 onwards were minimal and resulted in a total catch well below the U.S. base level catch of 3,500 fish. The preliminary escapement estimate of Taku River large Chinook salmon is 12,381 fish, which was well below the escapement goal range.

The 2016 traditional District 111 sockeye salmon harvest of 148,317 fish was 146% of the recent ten-year average. Peak catches of sockeye salmon occurred in weeks 32 and 33 (early-to-mid August; Figure 34). The Speel Arm SHA was opened continuously from the second week of August to mid-September to harvest enhanced DIPAC sockeye salmon returning to the Snettisham Hatchery. The lower bound of the Speel Lake sustainable escapement goal range of 4,000 to 9,000 fish was reached on August 14 and the final weir count was 5,571 sockeye salmon. The peak harvest in the Speel Arm SHA occurred in week 33, when 80 boats harvested 37,813 sockeye salmon and smaller numbers of other species of salmon. A total of 66,732 sockeye salmon were caught in the SHA in 2016. The preliminary escapement estimate of Taku River sockeye salmon is 174,000 fish, which was above the escapement goal range.

The 2016 traditional District 111 coho salmon harvest of 34,445 fish was 87% of the recent ten-year average (Figure 35). Approximately 76% of the coho salmon were harvested in Taku Inlet, which was below the ten-year average of 83%, and 23% were harvested from Stephens Passage and Port Snettisham. Coho salmon stocks harvested in District 111 include runs to the Taku River, Port Snettisham, Stephens Passage, and local Juneau area streams as well as Alaskan hatcheries. This was the second year of full production for DIPAC's revitalized enhanced coho salmon program. DIPAC enhanced coho salmon first appeared in the District 111 harvest in week 36 and comprised 21% to 72% of the harvest each remaining week of the fishery. DIPAC enhanced coho salmon contributed 21% of the 2016 District 111 traditional drift gillnet harvest. The preliminary escapement estimate of Taku River coho salmon is 87,700 fish, which was near the upper end of the escapement goal range.

The 2016 District 111 traditional pink salmon harvest of 44,668 fish was only 29% of the ten-year average (Figure 36). The 2016 pink salmon escapement to the Taku River was unknown; however, the number of pink salmon passing through the fish wheels at Canyon Island is used as an index of escapement. The 2016 Canyon Island pink salmon fish wheel catch of 1,369 fish (not including new 3rd fish wheel catch) was only 13% of the 1996-2014 odd-year average, and was the lowest fish wheel catch since the program began in 1985.

The 2016 District 111 traditional fishery chum salmon harvest of 447,616 fish was 76% of the recent ten-year average, and was comprised almost entirely of summer run fish (Figure 37). The summer chum salmon run continues through mid-August (week 33) and is comprised mostly of domestic hatchery fish and small numbers of wild stocks. Chum salmon returning to DIPAC release sites in Gastineau Channel and Limestone Inlet contributed a major portion of the harvest, but quantitative contribution estimates are not available. Approximately 77% of the District 111 chum harvest was taken in Taku Inlet, and 21% in Stephens Passage. The harvest of 1,885 fall-run chum salmon (i.e. chum salmon caught after week 33) was only 45% of the recent ten-year average. Most of these fall-run chum salmon are probably of wild Taku and Whiting River origin. Chum salmon escapement numbers to the Taku River are unknown; however, the numbers of fall chum passing through the fish wheels at Canyon Island is used as an index of escapement. The Canyon Island fish wheel project ceased operations on September 27, 2016, and the index of 66 chum salmon (not including new 3rd fish wheel catch) was the lowest since the inception of the project.

Table 8. –Weekly salmon harvest in the Alaskan District 111 traditional commercial drift gillnet fishery, 2016^a.

Week	Start Date	Chinook	Sockeye	Coho	Pink	Chum	Boats	Days	Boat Days
26	19-Jun	134	1,721	59	1	4,950	29	2	58
27	26-Jun	163	3,471	246	116	30,075	47	3	141
28	3-Jul	72	3,963	398	822	41,038	54	3	162
29	10-Jul	46	5,387	1,538	3,098	155,756	70	4	280
30	17-Jul	95	23,160	1,710	7,721	150,860	103	4	412
31	24-Jul	27	14,382	982	5,049	26,758	76	4	304
32	31-Jul	14	47,511	1,879	5,880	29,270	69	4	276
33	7-Aug	8	27,605	2,287	21,116	7,024	114	4	456
34	15-Aug	15	11,362	2,400	652	743	52	3	156
35	21-Aug	2	8,340	5,118	206	550	54	3	162
36	28-Aug	3	1,258	6,760	7	297	43	3	129
37	4-Sep	2	135	4,831	0	135	34	3	102
38	11-Sep	0	18	3,454	0	59	27	4	108
39	18-Sep	1	4	1,863	0	77	15	4	60
40-41	25-Sep	0	0	920	0	24	11	8	44
Total		582	148,317	34,445	44,668	447,616	170	56	2,850
2006-2015 Average		1,581	101,680	39,730	153,665	587,805	185	56	2,983
2016 as % of Average		37%	146%	87%	29%	76%	92%	100%	96%

^a The 2016 District 111 drift gillnet harvest and effort, as well as the 2006-2015 averages, are for the directed sockeye and coho salmon portions of the fishery only. There was no directed fishery for Chinook salmon in District 111 in 2016 due to a low Taku River preseason abundance forecast.

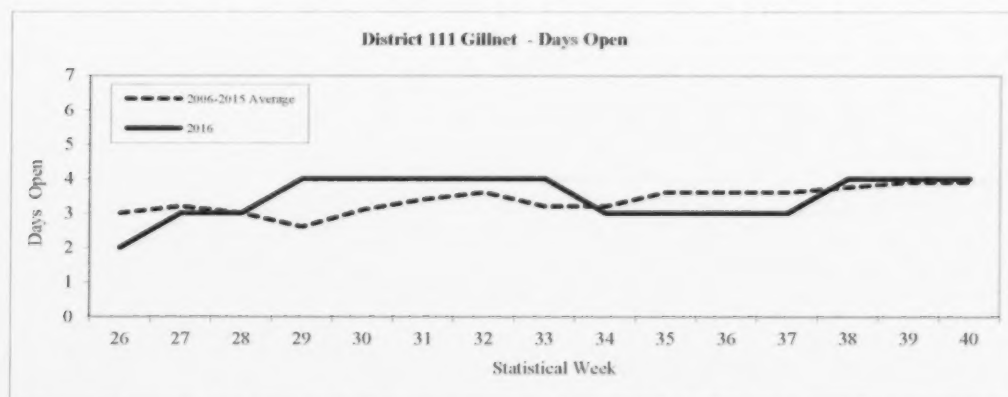


Figure 31. – Days open by week in the District 111 drift gillnet fishery, 2016.

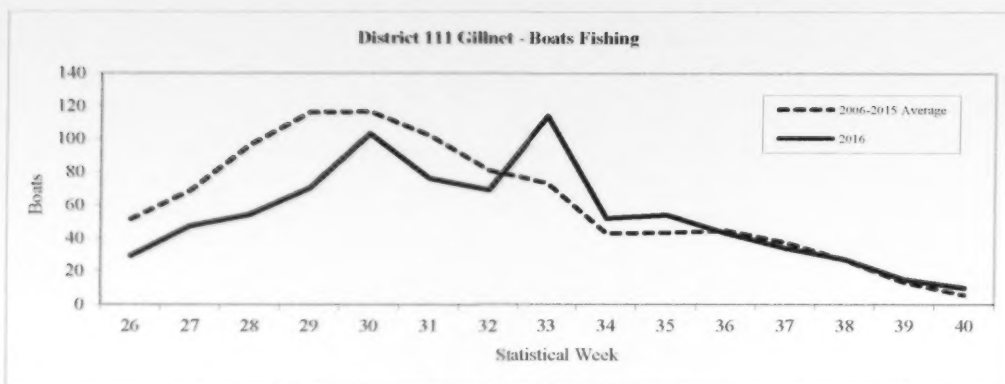


Figure 32. – Number of boats fishing by week in the District 111 drift gillnet fishery, 2016.

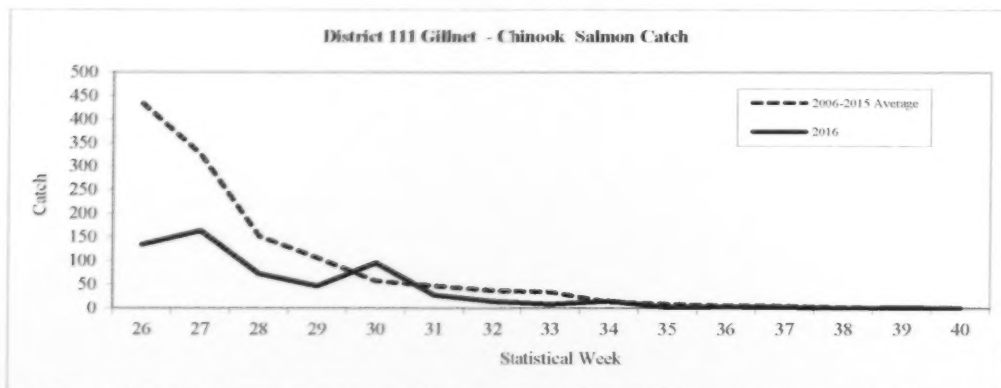


Figure 33. – Chinook salmon harvest by week in the District 111 drift gillnet fishery, 2016.

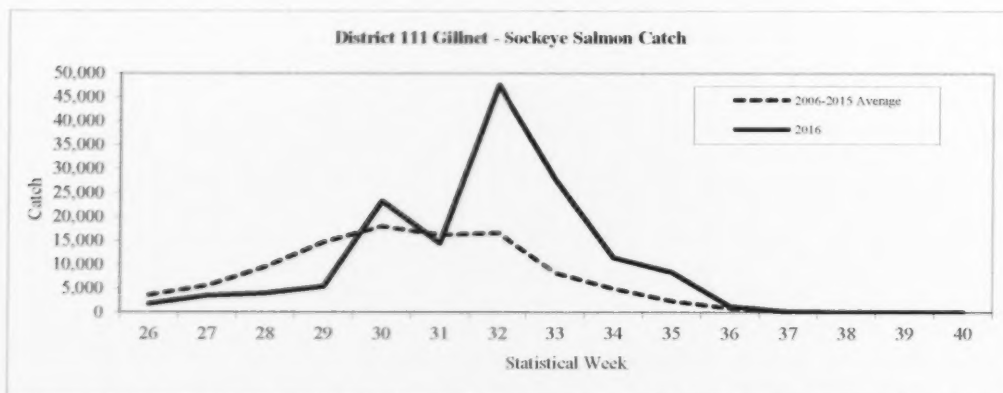


Figure 34. – Sockeye salmon harvest by week in the District 111 drift gillnet fishery, 2016.

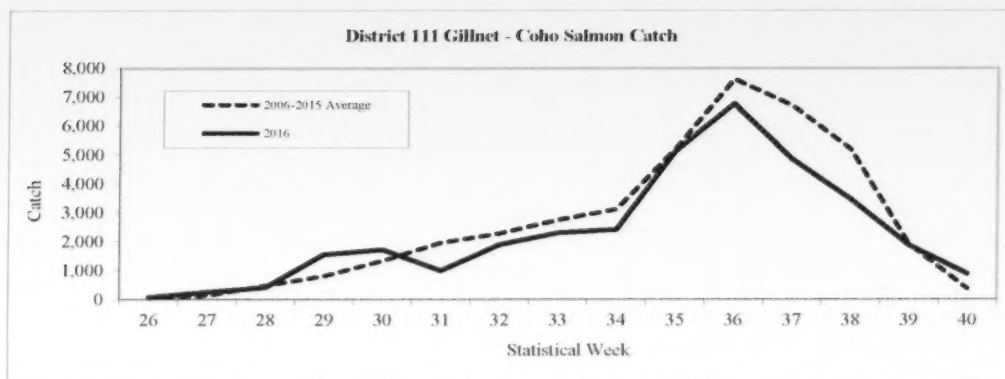


Figure 35. – Coho salmon harvest by week in the District 111 drift gillnet fishery, 2016.

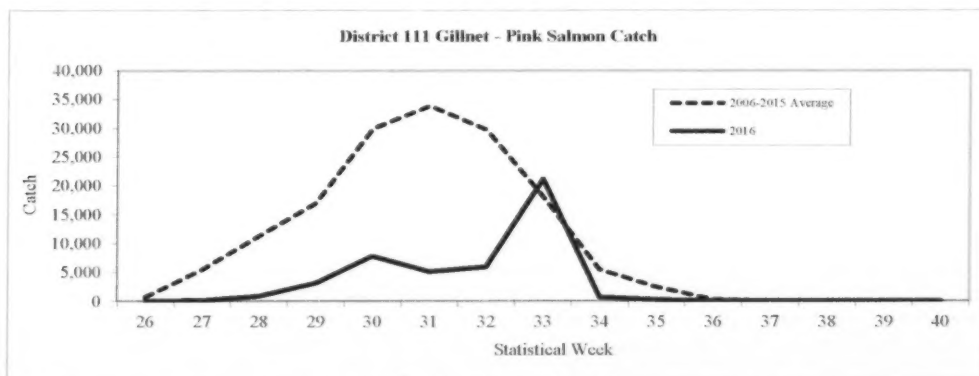


Figure 36. – Pink salmon harvest by week in the District 111 drift gillnet fishery, 2016.

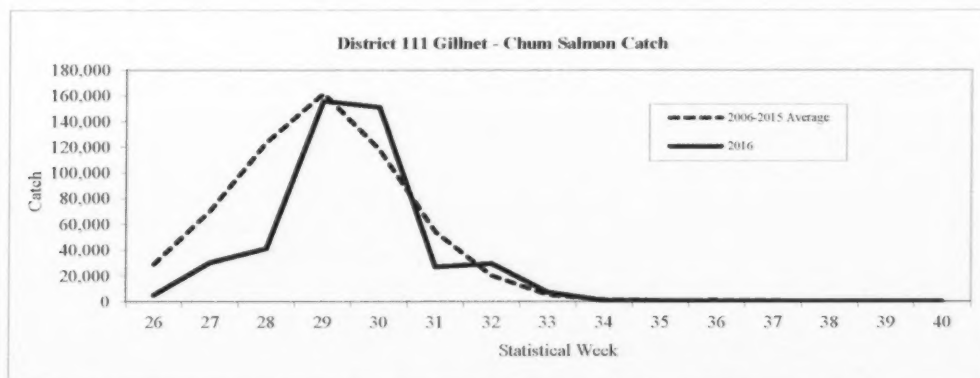


Figure 37. – Chum salmon harvest by week in the District 111 drift gillnet fishery, 2016.

Transboundary River Joint Enhancement

The transport of sockeye salmon fry from the Snettisham Hatchery facility back to the Canadian lakes was complete on May 27, 2016. Approximately 3.9 million fry were released in Tahltan, King Salmon, and Tatsamenie lakes in Canada. The overall green egg to fry survival of 74% for brood year (BY) 2015 releases (Table 9) was above the previous five-year average survival of 58.3% (BY09-BY13) for Tatsamenie and Tahltan fry. Fry from one Tatsamenie stock incubator tested positive this year for IHNV, accounting for a loss of approximately 89,100 fry prior to transport/back-planting. After transporting BY15 fry back to their

respective lakes, all TBR modules, incubators, and short-term fry rearing containers were broken down, cleaned, and disinfected prior to setting up to receive green eggs from BY16 egg-takes.

Brood year 2016 egg-takes were initiated on September 2 at Tahltan Lake, September 13 at Tatsamenie Lake, and September 9 at Trapper Lake. An estimated total of 7.8 million green eggs were collected from the three donor lakes. Tahltan Lake egg-takes were completed on September 23, and an estimated 5.3 million eggs in 11 egg lots were taken. Due to poor weather conditions, the receipt of six lots of Tahltan eggs was delayed by one or two days. Tatsamenie Lake egg-takes were completed on September 24th and 2.2 million eggs were collected in 4 lots. Due to poor weather conditions, the receipt of three lots of Tatsamenie eggs was delayed by one to three days. A single Trapper Lake egg-take occurred on September 9th. This one lot, estimated at 277,200 green eggs, was received at Snettisham Hatchery on September 10th and was delayed one day, due again to poor weather conditions. Adult sockeye salmon tissues were collected on the spawning grounds by contractors for DFO and shipped to the ADF&G Juneau Fish Pathology laboratory via Snettisham Hatchery as per treaty agreement.

Table 9. – Summary of numbers and survival rates of brood year 2015 sockeye salmon fry released May 2016. Fish were raised at Snettisham Hatchery as part of the Transboundary River Salmon Enhancement Project.

Brood stock	Release site	Number of trips	Survival rate to eyed stage	Survival rate to release	Number released
Tahltan	Tahltan Lk	7	83.8%	75.4%	3,399,600
Tatsamenie	Upper Tats Lk	1	77.9%	73.4%	384,300
Tatsamenie	Upper Tats Lk, Extended Rearing	1	85.8%	41.7%	86,200
Average/Totals		9	83.3%	73.9%	3,870,100

During the 2016 season, the ADF&G Thermal Mark Lab processed 19,106 sockeye salmon otoliths collected by ADF&G and DFO staff as part of the U.S./Canada fry-planting evaluation program. These collections came from commercial and test fisheries in both U.S. and Canadian waters on the Taku and Stikine Rivers over a 12-week period. The laboratory provided estimates on hatchery contributions for 93 distinct sample collections. Estimates of the percentage of hatchery fish contributed to commercial fishery catches were provided to ADF&G and DFO fishery managers 24 to 48 hours after samples arrived at the lab.

Alsek River Area Fisheries

Although harvest sharing arrangements of Alsek salmon stocks between Canada and the U.S. have not been specified, Annex IV of the Pacific Salmon Treaty calls for the development and implementation of cooperative abundance-based management plans and programs for Alsek River Chinook and sockeye salmon. Escapement goals are in place for Chinook and sockeye salmon stocks spawning at the Klukshu River, a tributary that flows into the Tatshenshini River, approximately 80 km northeast of its junction with the Alsek River. The principal escapement-monitoring tool for Chinook, sockeye, and coho salmon stocks on the Alsek River is the Klukshu River weir, operated by Fisheries and Oceans Canada in cooperation with the Champagne-Aishihik First Nation since 1976. In 2013, Canadian and U.S. biologists adopted a new biological escapement goal range of 7,500 to 11,000 sockeye salmon through the Klukshu River weir. The current biological escapement goal range for Klukshu River Chinook salmon, adopted in February 2013, is a range of 800 to 1,200 fish.

The Department of Fish and Game manages the Alsek River commercial set gillnet fishery to achieve the agreed upon escapement goal ranges. Time and area openings are adjusted by monitoring fishery performance data and comparing it to historical CPUE. The duration of weekly fishing periods is based on fishery performance data (CPUE) and Klukshu River weir data. Historically, gillnets have often been

restricted to a maximum mesh size of 6 inches through July 1 to minimize Chinook salmon harvest. The mesh restriction was lifted in 2013 and 2014, but was reintroduced in 2015 and implemented again in 2016.

Preseason expectations were for above average runs in 2016 for both sockeye and Chinook salmon. The overall Alsek drainage sockeye salmon run was expected to be approximately 83,000 fish, which would have been above the recent ten-year average of 68,000 fish. The outlook for 2016 was based on a predicted run of 19,000 Klukshu River sockeye salmon, derived from the latest Klukshu River stock-recruitment data, a Klukshu River contribution rate of 23% to the total run (based on mark-recapture results; 2000-04), and run size estimates using GSI (2005-06, 2011). Principal contributing brood years for the 2016 return were 2011 and 2012. The Klukshu River escapement in 2011 was approximately 21,400 sockeye salmon; well above the ten-year average of 15,600 fish. The sockeye salmon escapement in 2012 was 17,694, which was also above average. Based on the primary brood year escapements, the outlook for Klukshu River Chinook salmon in 2016 was for a return of 1,900 fish; slightly above the ten-year average of 1,400 fish.

The 2016 Alsek River set gillnet fishery opened Sunday June 5 (week 24). The total number of individual permits fishing during the season was 18, which was equal to the 2006–2015 average. The number of boats fishing during weekly openings was slightly above the recent ten-year average. The commercial fishery was opened for a total of 65.5 days which was twice the ten-year average of 32 days. The overall effort in boat-days was 277% of average (Table 10). Harvests of Chinook salmon through late June were below the recent ten-year average (Table 10). Harvests of sockeye salmon were below average in most weeks of the fishery and the total harvest of 6,709 fish was 43% of the 2006–2015 average of 15,770 fish (Table 10). There was little effort after early August. In the past several years there has been reduced fishing effort during coho salmon season due to economic struggles and lack of pilots to transport fish to town. In 2016, only 652 coho salmon were harvested (Table 10).

The Klukshu River weir count of 7,584 sockeye salmon met the lower bound of the 7,500 to 11,000 fish escapement goal range. The count of 1,405 early run sockeye salmon (count through August 15) and the late run count of 6,179 were both below average. The 651 Chinook salmon counted through the Klukshu River weir fell below the established goal range of 800 to 1,200 Chinook salmon.

Table 10. – Weekly fishing effort and salmon harvest for Alsek River, 2016.

Statistical Week	Start Date	Catch					Effort		Boat Days
		Chinook	Sockeye	Coho	Pink	Chum	Boats	Days	
24	5-Jun	28	136	0	0	0	11	1	11
25	12-Jun	22	799	0	0	0	16	1	16
26	19-Jun	21	1,067	0	0	0	15	1	15
27	26-Jun	3	809	0	0	0	12	1	12
28	3-Jul	5	1,196	0	0	0	12	1	12
29	10-Jul	53	1,161	0	0	0	11	1	11
30	17-Jul	0	365	0	0	1	8	1	8
31	24-Jul	0	684	0	0	0	9	2	18
32	31-Jul	0	284	0	0	0	7	1	7
33-35 ^a	7-Aug	0	105	25	0	1	7	6	42
36 ^b	28-Aug							3	
37-44 ^{ac}	10-Sep	0	2	630	0	2	8	46.5	372
Total		132	6,709	655	0	4	18	65.5	524
2006-2015 Avg.		478	15,770	1,102	0	6	18	32	189
2016 as % of Avg.		28%	43%	59%		67%	100%	205%	277%

^a Includes weeks with fewer than three permits, confidential information so data combined in catch table.

^b Number of days the fishery was opened but not fished.

^c Weeks 39-42 & 44 were opened to fishing but not fished.

SOUTHEAST ALASKA CHINOOK SALMON FISHERY

All Gear Harvest

The 2016 SEAK Chinook salmon management programs were configured around an assumed draft abundance index (AI) of 2.06 for the 2016 fishing season (Table 1).

This was the eighth year that the Annex IV, Chapter 3 provisions of the 2009 PST Agreement were implemented. Therefore, the harvest limit for SEAK reflects a 15% reduction in allowable catch (AC) from that allowed under the 1999 PST Agreement. The preliminary total Chinook salmon harvest by all SEAK commercial fisheries was 318,730 fish, and the preliminary sport fish harvest was 70,000, for an all-gear harvest of 388,730 (Table 11). The preliminary all-gear PST harvest was 353,264 fish (Table 12).

Table 11. – Preliminary estimated all-gear Chinook salmon harvests in 2016.

Gear	Total Harvest	AK Hatchery Harvest	Wild Terminal Exclusion	Alaska Hatchery Addon	Treaty Harvest	Quota	O/U	% O/U
Troll	276,432	13,780	405	10,362	265,666			
Sport	70,000	10,300	0	8,269	61,731			
Drift Gillnet	13,825	9,547	0	8,511	5,314			
Purse Seine	28,244	8,256	0	7,921	20,323			
Set Gillnet	230	0	0	0	230			
Total Net	42,298	17,803	0	16,431	25,867			
Total All Gear	388,730	41,883	405	35,062	353,264			

Note: Annette Island and terminal area harvests are included.

Table 12. – Chinook all-gear harvests in Southeast Alaska, 1987 to 2016, and deviation from the ceiling for years in which there were ceilings. Harvests are in thousands.

Year	Total Harvest	Add-on and Exclusion Harvest	Target Treaty Harvest	Treaty Harvest	Deviation Number	Deviation Percent
1987	282.4	17.1	263	265.3	2.3	0.9%
1988	279.3	22.5	263	256.8	-7.8	-3.0%
1989	291.0	21.5	263	269.5	6.5	2.5%
1990	366.9	45.9	302	321.0	19.0	6.3%
1991	359.5	61.5	273	298.0	25.0	9.2%
1992	258.8	36.8	227.4	222.0	-5.4	-2.4%
1993	304.1	32.9	263	271.2	8.2	3.1%
1994	264.4	29.2	240	235.2	-4.8	-2.0%
1995	235.7	58.8		176.9		
1996	236.3	81.3		155.0		
1997	343.0	56.3		286.7		
1998	270.6	27.4	260	243.2	-16.8	-6.5%
1999	251.0	52.2	184.2	198.8	14.6	7.9%
2000	263.3	76.8	178.5	186.5	8.0	4.5%
2001	265.7	78.8	250.3	186.9	-63.4	-25.3%
2002	426.5	69.4	371.9	357.1	-14.8	-4.0%
2003	439.4	59.3	439.6	380.2	-59.4	-13.5%
2004	499.3	82.2	418.3	417.0	-1.3	-0.3%
2005	493.1	104.5	387.4	388.6	1.2	0.3%
2006	435.5	75.4	354.5	360.1	5.6	1.6%
2007	404.6	76.4	259.2	328.2	69.0	26.6%
2008	244.2	71.4	152.9	172.8	19.9	13.0%
2009	293.7	65.6	176.0	228.0	52.0	29.6%
2010	284.7	53.9	215.8	230.8	15.0	6.9%
2011	357.0	66.3	283.3	290.7	7.4	2.6%
2012	295.0	52.5	205.1	242.5	37.4	18.3%
2013	257.3	65.6	176	191.4	15.4	8.8%
2014	492.5	56.6	378.6	435.2	56.6	14.9%
2015 ^{1,2}	405.3	67.3	337.5	337.8	0.3	0.1%
2016 ²	388.7	35.1		353.3		

¹ Preliminary.

² The actual all-gear harvest limit and deviation cannot be calculated until the CTC completes the postseason calibration.

Troll Fishery

The accounting of treaty Chinook salmon harvested by trollers begins with the winter fishery and ends with the summer fishery. The winter troll fishery is managed for a guideline harvest level (GHL) of 45,000 non-Alaska hatchery-produced Chinook salmon, with a guideline harvest range of 43,000–47,000 non-Alaska hatchery-produced fish, plus the number of Alaska hatchery-produced Chinook salmon harvested during the winter fishery. The 2015–2016 winter troll fishery was open from October 11, 2015 through March 8, 2016 and harvested a total of 52,291 Chinook salmon. Of these, 2,642 (5%) were of Alaska hatchery origin, of which 1,980 counted toward the Alaska hatchery add-on, resulting in a treaty catch of 50,311 (Table 13).

The spring troll fisheries target Alaskan hatchery-produced Chinook salmon and are conducted along migration routes or close to hatchery release sites. Terminal area fisheries, which begin during the spring, occur directly in front of hatcheries or at remote release sites. While there is no ceiling on the number of Chinook salmon harvested in the spring fisheries, the take of PST Chinook salmon is limited according to the percentage of the Alaskan hatchery fish taken in the fishery. Non-Alaska hatchery fish are counted towards the annual PST quota of Chinook salmon, while most of the Alaska hatchery fish are not.

In 2016, spring troll fisheries were conducted from April 15–June 30 in a total of 36 spring areas and six terminal area fisheries. A total of 42,227 Chinook salmon were harvested in spring and terminal troll areas combined, of which 8,974 (21%) were of Alaska hatchery origin and 6,761 counted toward the Alaska

hatchery add-on. Trollers harvested a total of 562 large Chinook during the nine days of directed Chinook salmon fishing in District 108. Of those, 405 counted as wild terminal exclusion fish, resulting in a PST harvest of 35,623 fish (Table 13).

The 2016 summer troll fishery included two Chinook salmon retention periods, from July 1–5 and August 13–September 3. In addition to the traditional summer retentions periods, an experimental mark-selective fishery was conducted from September 4–30 (459 Chinook retained). A total of 181,352 Chinook salmon were harvested, of which 2,163 (11%) were of Alaska hatchery origin and 1,621 counted toward the Alaska hatchery add-on. The resulting PST catch was 179,731 fish. The total harvest for all troll fisheries in the 2016 accounting year was 276,432 Chinook salmon, of which 265,666 counted as PST harvest.

Table 13. – Preliminary 2016 troll fishery Chinook salmon harvest by season.

Gear/Fishery	Total Harvest	Alaska Hatchery Harvest	Alaska Hatchery Add-on	Terminal Exclusion Harvest	Total Term. Exclusion/ Alaska Hatchery Add-on	Treaty Harvest
Winter Troll	52,291	2,642	1,980	0	1,980	50,311
Spring Troll ^a	42,789	8,974	6,761	405	7,166	35,623
Summer Troll						
First Period ^b	106,653	1,197	897	0	897	105,756
Second Period	74,240	954	715	0	715	73,525
MSF ^c	459	12	9		9	450
Total Summer	181,352	2,163	1,621	0	1,621	179,731
Total Traditional Troll	276,432	13,780	10,362	405	10,766	265,666
Annette Is. Troll	0	0	0	0	0	0
Total Troll Harvest	276,432	13,780	10,362	405	10,766	265,666

^a Spring troll harvest includes all terminal and Wild Terminal Exclusion harvests for year.

^b Total summer harvest includes confiscated harvest for year.

^c The mark-selective fishery occurred during the second Chinook Non-Retention coho-directed fishery.

Net Fisheries

A total of 13,825 Chinook salmon were harvested in the drift gillnet fisheries in 2016, of which 9,547 (69%) were of Alaska hatchery origin and 8,511 counted toward the Alaska hatchery add-on, resulting in a PST harvest of 5,314 fish (Table 11). A total of 28,244 Chinook salmon were harvested in the purse seine fisheries, of which 8,256 (29%) were of Alaska hatchery origin and 7,921 counted toward the Alaska hatchery add-on, resulting in a PST harvest of 20,323 fish. A total of 230 Chinook salmon were harvested in the set gillnet fisheries, none of which were of Alaska hatchery origin, resulting in a PST harvest of 230 fish (Table 11).

With the exception of directed gillnet harvests of Chinook salmon in SEAK terminal area regulatory Districts 108 and 111, as provided in the Transboundary River agreement (Chapter 1), harvests of Chinook salmon in the net fisheries are primarily incidental to the harvest of other species and only constituted a small fraction (<1.0%) of the total net harvest of all species. In 2016, the initial preseason forecast for large Chinook salmon returning to the Stikine River was large enough to allow for directed Chinook salmon fisheries in District 108. The drift gillnet fleet harvested an estimated 118 large Chinook salmon during the three days of fishing that occurred between May 2 and May 16 (Table 7).

Recreational Fisheries

The Southeast Alaska king salmon sport fishery is managed under provisions of the Southeast Alaska King Salmon Management Plan (5 AAC 47.055). This plan prescribes management measures based upon the preseason abundance index determined by the Chinook Technical Committee of the Pacific Salmon Commission. The preseason abundance index generated for the SEAK AABM fishery in 2016 was 2.06,

resulting in a preseason sport allocation of 65,799 treaty Chinook salmon under the harvest management plan adopted by Alaska Board of Fisheries. Based on this preseason AI and the SEAK King Salmon Management Plan, a resident sport fish angler was allowed to use two rods from October through March, and the bag and possession limit was three king salmon 28 inches or greater in length. The non-resident annual harvest limit was six king salmon 28 inches or greater in length; daily bag and possession limits were one king salmon 28 inches or greater in length except during May and June, when the bag and possession limit was two fish 28 inches or greater in length. The 2016 recreational fishery had an estimated preliminary total harvest of 70,000 Chinook salmon, of which 61,731 counted as treaty harvest. The final total and treaty harvest in the sport fishery for 2016 will be available in late fall of 2017.

SOUTHEAST ALASKA COHO SALMON FISHERIES

Attachment B of the June 30, 1999 U.S.-Canada Agreement relating to the Pacific Salmon Treaty specifies provisions for inseason conservation and information sharing for northern boundary coho salmon. In 2016, troll CPUE in Area 6 in the early weeks of the fishery averaged 40 coho/day, which was well above the highest boundary area conservation trigger of 22 coho/day. The mid-July projection of region-wide total commercial harvest of 2.13 million was greater than the 1.1 million trigger for an early region-wide troll closure, specified in Alaska Board of Fisheries regulation and the PST conservation agreement.

The 2016 region-wide summer troll coho fishery began by regulation on June 1. The mid-season closure occurred from August 9–12, and the fishery was extended for 10 days past the normal September 20 ending date. The 2016 all-gear catch of coho salmon totalled 2.37 million fish, of which 2.10 million (88%) were taken in commercial fisheries (Table 14). The troll catch of 1.39 million fish was 10% below the 10-year average of 1.54 million fish and accounted for 66% of the commercial catch. Power troll wild coho CPUEs were above the 10-year average during the third and fifth statistical weeks of July and below average for the rest of the season. The overall wild stock abundance (wild troll catch divided by an index of the troll exploitation rate) was estimated at 4.82 million, and was 22% above the 20-year average. The purse seine harvest of 267,200 fish was 10% below the 10-year average while the drift gillnet harvest of 299,600 fish was 20% below the 10-year average. The set gillnet harvest of 144,000 fish in the Yakutat area was 12% above the 10-year average, with 90% of the catch taken in the Situk-Ahrnklin Lagoon and 8% in the Tsiu River system. A very preliminary estimate of the Southeast Alaska sport catch (273,700) is 9% above the 10-year average (252,100 fish).

Wild production accounted for 1.65 million fish (79%) in the commercial catch compared with a recent 10-year average of 1.80 million fish (78% wild). The hatchery percentage of the commercial catch (21.3%) was the lowest since 2010, and well below the recent range of 24–28% during 2011–2015. Of the estimated hatchery contribution of 448,700 fish, over 99% originated from facilities in Southeast Alaska. Klawock Hatchery dominated the hatchery component, contributing 47% of the hatchery troll harvest and 40% of the total commercial harvest of hatchery-reared fish, while accounting for an estimated 11.5% of the combined troll harvest of wild and hatchery stocks.

Escapement counts and estimates were within or above goal in most cases. The total escapement of 944 coho salmon to Hugh Smith Lake was within the biological escapement goal (500–1,600 spawners) for the second consecutive year, after consistently exceeding the goal during the prior seven years. The estimated total run size of 2,583 adults was 38% below the long-term (1982–2015) average of 4,154 adults. Escapements were within respective goal ranges for four northern Southeast inside stocks (Auke Creek, Berners River, Taku River, Montana Creek) while falling under goal for two streams in that area (Chilkat River, Peterson Creek). The combined peak count of 13,420 coho salmon in the 14 surveyed streams in the Ketchikan area was well-above the 1987–2015 average of 8,666 spawners, and the goal of 4,250–8,500 spawners. The combined peak count of spawners in five streams in the Sitka area was the highest on record.

Marine survival was well-below average (6.6% versus 12.8%) for the Hugh Smith Lake population southeast of Ketchikan, and reached record lows in the northern inside area where marine survival rates of

4.1% for Auke Creek and 6.4% for the Berners River where far below historical averages of 19% and 16%, respectively. Coho salmon returns appeared to be proportionately much stronger in outer coastal systems from southern Southeast to Yakutat, compared with inside area streams.

Total exploitation rate estimates were low to moderate for wild indicator stocks, ranging from 25% for Auke Creek and 28% for Berners River to 63% for Hugh Smith Lake. The estimated all-gear exploitation rate on the Hugh Smith Lake stock of 63% was the highest since 2004, while falling approximately midway between averages of 75% for the 1990s and 53% during 2000–2015. The Alaska troll fishery exploitation rate on the Hugh Smith Lake stock (30%) was below the historical (1982–2015) average of 33% but was the highest Alaska troll exploitation rate since 2005. Alaska troll fishery exploitation rates on northern inside stocks were the lowest on record at 7–8% for both Auke Creek and the Berners River compared with a long-term average for Auke Creek of 28%, and a peak 10-year (1989–1998) average of 33%.

Table 14. – Coho salmon harvest in Southeast Alaska in 2016 by gear type (preliminary).

Gear Type	Harvest
Troll	1,386,600
Purse Seine	267,200
Drift Gillnet	299,600
Set Gillnet	144,000
Sport (marine and freshwater)	273,700
Total	2,371,100

PRELIMINARY 2016 CHINOOK AND COHO SALMON FISHERIES IN WASHINGTON AND OREGON

Introduction

This report describes the conduct of United States (U.S.) fisheries of interest to the Pacific Salmon Commission (PSC) that occurred during 2016 in the area north of Cape Falcon, Oregon and south of the U.S./Canada border. These fisheries were conducted under pre-season management plans that were consistent with Annex IV of the Pacific Salmon Treaty (PST 2008) including obligations defined within Chapter 3 for Chinook individual stock based management regimes (ISBM) and Chapter 5 for Southern Coho Management.

An overview of the Chinook (*Oncorhynchus tshawytscha*) and Coho (*Oncorhynchus kisutch*) salmon conservation challenges facing managers during the 2016 pre-season planning process in this region is provided. The conduct of major fisheries is described, and estimates of landed catch, where available, are compared to pre-season catch limits or expectations for Chinook (Table 15) and Coho (Table 16). For perspective, landed catches for those fisheries since 2011 are also presented. Where available, preliminary estimates of the number of Chinook or Coho salmon released by anglers in 2016 mark-selective fisheries are also presented (Table 17). All estimates for the 2016 fisheries are preliminary and subject to change. Estimates of spawning escapements and abundance of Coho and Chinook stocks are not available at this time.

Pre-season Planning

Pre-season planning for southern U.S. fisheries of interest to the PSC is a coordinated activity involving Tribal, State and Federal management entities, with the involvement of conservation and fishing interests. The Pacific Fishery Management Council (PFMC) conducted a series of public meetings to consider options for ocean fishery season structures while the Tribes and States conducted government-to-government and public, open meetings throughout the region to develop and analyse alternative season

structures for fisheries in the inside waters of the Columbia River, coastal Washington and Puget Sound. Participants in these various planning sessions evaluated the biological and socio-economic consequences of the alternative season structures for the outside (ocean) and inside (marine and freshwater) fisheries (Figure 38) including the anticipated impacts on U.S. southern origin stocks in fisheries conducted under the PST in Canada and Southeast Alaska. Agreement was reached on season structures expected to achieve conservation goals, domestic fishery objectives and legal obligations, including the PST, assuming fisheries are conducted as planned and pre-season abundance estimates are accurate.

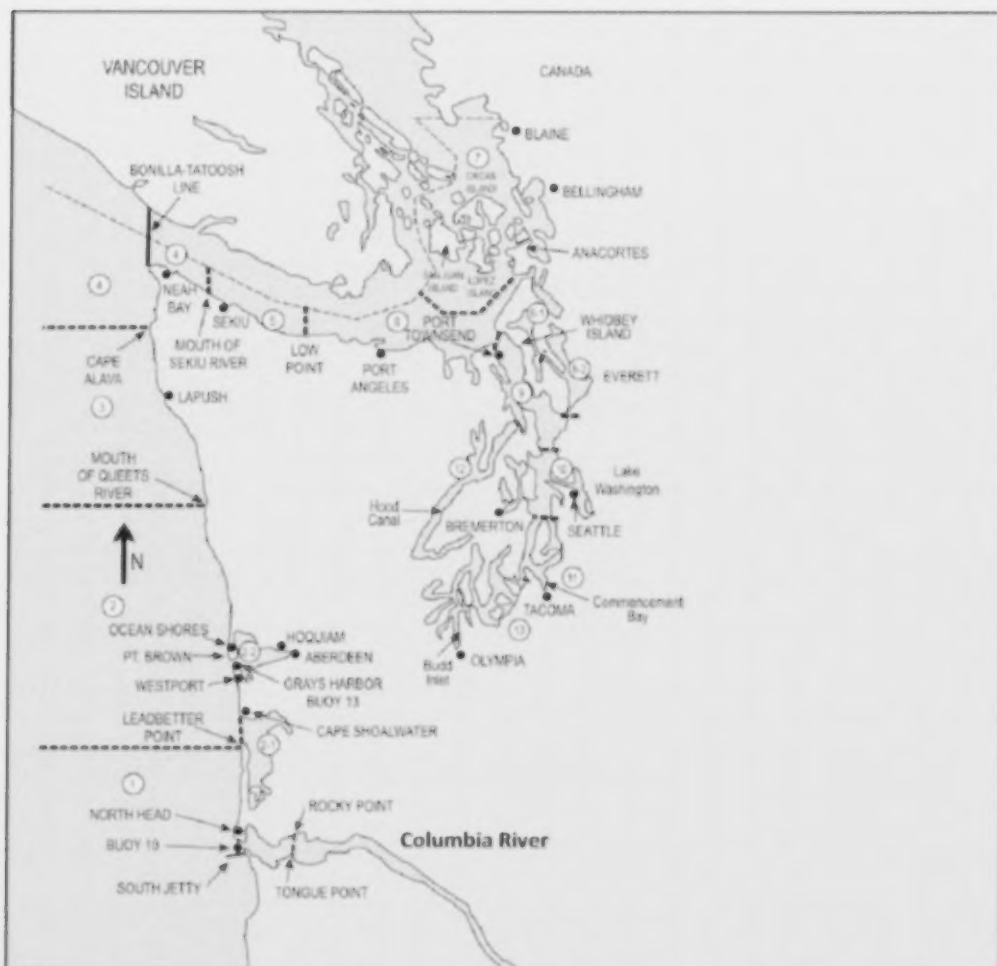


Figure 38. - Map of Western Washington marine catch areas of the Washington coast (Areas 1 through 4) and Puget Sound (Areas 5 through 13) (WAC 220-22-030). Inside (Columbia River) fisheries reported in this document extend beyond the scope of this map.

Chinook Salmon Management

Under the 2008 Pacific Salmon Treaty Agreement, southern U.S. fisheries are subject to the Individual Stock Based Management provisions of Annex IV, Chapter 3. These provisions require the non-ceiling index for aggregated Southern U.S. fisheries on Chinook stocks not achieving their management objectives to be no greater than 60% of the levels estimated for the 1979 – 1982 base period.

Conservation obligations associated with the U.S. Endangered Species Act (ESA) for threatened and endangered Chinook salmon stocks originating from Puget Sound and the Columbia River have been more constraining to southern U.S. fisheries than PST obligations. Catch quotas for the 2016 U.S. ocean fisheries in the area north of Cape Falcon, Oregon, were defined by the impact limits on ESA-listed lower Columbia River natural tule fall Chinook stocks, ESA-listed Puget Sound Chinook stocks, and the abundance of other healthy, harvestable Chinook salmon stocks contributing to fisheries in this area. Puget Sound fishing seasons were structured to provide fishing opportunity on healthy salmon species or stocks within the impact limits defined for ESA-listed Puget Sound Chinook.

Coho Salmon Management

During the pre-season fishery planning process of 2016, Canadian fishery managers informed the U.S. that the Interior Fraser management unit was again expected to be in the low categorical abundance status, and U.S. fisheries were constrained to ensure that the exploitation rate on this management unit did not exceed 10.0% as defined by the PST Southern Coho Management Plan. All U.S. natural spawning Coho management units specified by the PST Southern Coho Management Plan were forecasted to be in low status except Hood Canal natural Coho were at moderate status.

The impact on natural Coho stocks, seasons and catch limits adopted for southern U.S. fisheries were predicted using the Fisheries Regulation Assessment Model (FRAM). The total exploitation rate on the Interior Fraser management unit was predicted to be 3.7% in Southern U.S. fisheries. Seasons and Coho quota levels for U.S. ocean fisheries were closed or severely constrained by the management objectives of Washington coastal and Puget Sound natural Coho and ESA-listed lower Columbia River natural Coho, and limits to fisheries in marine areas within northern Puget Sound and the Strait of Juan de Fuca were likewise constrained by management objectives reflecting very low forecasted returns for Puget Sound natural Coho stocks.

NORTH OF CAPE FALCON OCEAN FISHERIES

Details regarding North of Cape Falcon ocean salmon fishing plans were reported in Preseason Report III, published by the Pacific Fishery Management Council in April 2016.

<http://www.pcouncil.org/salmon/stock-assessment-and-fishery-evaluation-safe-documents/preseason-reports/2016-preseason-report-iii/>

Fisheries in this area are managed to meet conservation objectives for ESA-listed stocks, natural stocks and brood stock goals for hatchery stocks. Within these stock management objectives, ocean fishing seasons are defined that meet legal requirements of Tribal treaties and allocations between Non-Tribal troll and sport fisheries. Ocean fishery seasons are also constructed to ensure a balance of opportunity for harvest with the inside fisheries. Lower Columbia River hatchery Coho and Columbia River fall Chinook have historically been the major stocks contributing to catches of ocean fisheries in the North of Cape Falcon area.

Chinook and Coho salmon catch quotas were established for the 2016 ocean Tribal, Non-Tribal troll and sport fisheries. Ocean fishery quotas for Chinook salmon were defined by exploitation rate limits on several ESA-listed Puget Sound Chinook stocks as well as the total exploitation rate limit of 41% on ESA-listed lower Columbia River natural tule fall Chinook stocks in all fisheries. Due to conservation concerns, retention of coho was not allowed except for a 18,900 marked coho selective recreational fishery off the Columbia River mouth.

Non-Tribal Troll Fishery

Pre-season quota levels for the non-Tribal troll fisheries were 35,000 Chinook with no Coho retention. The preliminary estimate of non-Tribal harvest in the 2016 North of Falcon troll fishery is 19,500 Chinook (55%

of the coast-wide quota). Trollers harvested 12,700 Chinook in the May 1 – June 30 fishery, and the remaining 6,800 Chinook were harvested in the summer fishery between July 8 and August 23.

Tribal Troll Fishery

The Tribal troll ocean fishery (also known as the Treaty troll fishery) quotas were defined by conservation concerns for ESA listed Chinook and Coho stocks, as well as very low forecasted returns of Washington coastal and Puget Sound Coho stocks. For Chinook salmon quotas, Lower Columbia River Tule Chinook salmon and Lower Columbia River Wild Chinook salmon were the stocks that established the Chinook quota at 40,000. Coho retention was not allowed due to constraints by Washington coastal Coho salmon as well as Puget Sound Coho. The Tribal troll fishery takes place in ocean areas 2, 3, 4 and 4B. The season was comprised of a May/June Chinook-directed fishery and a July 1 through August 31 fishery which normally targets all species (Chinook and Coho) but was truncated and closed to Coho this year. The Chinook quota was split 50:50 between the two fisheries. The Chinook-directed fishery ran through all of May and closed on June 30 and caught 16,947 of the 20,000 Chinook sub-quota or 84.7%. The Tribal trollers made 391 landings during this fishery. The second half of the fishery opened on July 1 with the same Chinook sub-quota as the first fishery. That fishery closed on August 31 taking 29% of the Chinook sub-quota. The season concluded with a total catch of 22,741 Chinook salmon (56.9% of the overall quota). The Tribes made 604 landings during the ocean Tribal troll season.

Sport Fisheries

Pre-season quotas for the sport fishery were 35,000 Chinook and 18,900 Coho with a clipped adipose fin, hereinafter referred to as marked. Preliminary total catch estimates for the ocean sport fisheries north of Cape Falcon were 18,000 Chinook (51% of the coast-wide quota) and 18,600 Coho (99% of the coast-wide quota). A description of the resulting season structure and catches by management area follows.

Columbia Ocean Area (including Oregon)

All-species salmon sport fishing opened in Ocean Area 1 (Columbia Ocean Area) on July 1 with a pre-season quota of 18,900 marked Coho and a guideline of 10,200 Chinook. The fishery closed upon attainment of the Coho quota on August 27. The catch estimates for Area 1 are 6,000 Chinook (59% of the guideline) and 18,600 Coho (98% of the quota). (62 additional Coho were landed in the sport fishery north of Cape Falcon, and retained illegally in Ocean Areas 2, 3, and 4.) The Chinook minimum size limit was 24 inches, with a sub-area closure in the Columbia Control Zone.

Preliminary estimates of Coho encounters (retained and released), and mark rate in the Area 1 Coho mark-selective sport fishery, July 1 – August 27, 2016.

Coho retained	Coho released	Total encounters	Mark %
18,600	14,100	32,700	64%

Westport, Washington

Ocean Area 2 (Westport, WA) opened for all-species salmon sport fishing on July 1 with a pre-season guideline of 16,600 Chinook; Coho retention was not allowed. The fishery closed as scheduled on August 21. The catch estimate for Area 2 is 8,400 Chinook (51% of the guideline). The Chinook minimum size limit was 24 inches.

Preliminary estimates of Coho encounters (retained and released), in the Area 2 Coho non-retention sport fishery, July 1 – August 21, 2016.

Coho retained	Coho released	Total encounters	Mark %
0	7,600	7,600	NA

La Push, Washington

Ocean Area 3 (La Push, WA) opened for all-species salmon sport fishing on July 1 with a pre-season guideline of 2,000 Chinook; Coho retention was not allowed. The fishery closed on its automatic closure date, August 21. The catch estimate for Area 3 is 300 Chinook (13% of the guideline). The Chinook minimum size limit was 24 inches.

Preliminary estimates of Coho encounters (retained and released), in the Area 3 Coho non-retention sport fishery, July 1 – August 21, 2016.			
Coho retained	Coho released	Total encounters	Mark %
0	1,100	1,100	NA

Neah Bay, Washington

Ocean Area 4 (Neah Bay, WA) opened for all-species salmon sport fishing on July 1 with a pre-season guideline of 6,200 Chinook; Coho retention was not allowed. The fishery closed on its automatic closure date, August 21. The catch estimate for Area 4 is 3,300 Chinook (53% of the guideline). The Chinook minimum size limit was 24 inches.

Preliminary estimates of Coho encounters (retained and released), in the Area 4 Coho non-retention sport fishery, July 1 – August 21, 2016.			
Coho retained	Coho released	Total encounters	Mark %
100	4,300	4,400	NA

NORTH OF CAPE FALCON INSIDE FISHERIES

Washington Coastal River Fisheries

North Washington Coastal Rivers

Net and sport fisheries directed at salmon in this region were implemented based upon pre-season, Tribal-State agreements and subject to in-season adjustments. The 2016 north coastal rivers net harvest (all by Tribal fisheries that are non-selective) includes catch from the Sooes, Quillayute system, Hoh, Queets, and Quinault Rivers. The 2016 commercial Tribal net fisheries in north coastal rivers have harvested an estimated 8,800 Chinook salmon and 49,800 Coho salmon through November 15, 2016.

Recreational fisheries conducted in the Quillayute, Hoh and Queets River systems included mark-selective fisheries for hatchery Chinook and hatchery summer and fall coho salmon. Harvest or impact estimates for these fisheries are unavailable at this time.

Grays Harbor, Washington

Harvest for Grays Harbor, WA includes catch from both the Humptulips and Chehalis Rivers through November 15, 2016. The non-selective Tribal net fisheries in Grays Harbor, and including fisheries in the Humptulips and Chehalis Rivers, harvested an estimated 2,100 Chinook salmon and 1,800 Coho salmon. The non-Tribal commercial fishery in the northern portion of Grays Harbor near the Humptulips River (Area 2C), was non-selective and harvested 18 Chinook and 28 Coho. There were 8 Chinook salmon (mark-selective) and 204 Coho harvested in the Non-Tribal commercial gillnet fishery in Areas 2A and 2D. Sport fisheries conducted in the Chehalis and Humptulips Rivers included mark-selective components for Chinook and Coho salmon. Harvest data for these fisheries are not available at this time.

COLUMBIA RIVER FISHERIES

Tribal and Non-Tribal net and sport salmon fisheries in 2016 occurred during the winter/spring (January – June 15), summer (June 16 – July) and fall (August – October) periods. All fisheries were constrained by impacts on ESA listed stocks. Winter/spring fisheries were primarily constrained by impacts on ESA listed upper Columbia River spring Chinook, Snake River spring/summer Chinook and wild winter Steelhead. Summer fisheries were constrained by impacts to ESA listed Snake River Sockeye. Fall fisheries were mainly constrained by impacts to ESA listed Snake River wild fall Chinook, wild lower Columbia tule fall Chinook and Group B Steelhead which are part of the Snake River Steelhead distinct population segment (DPS). Wild lower Columbia River Coho can be a constraint to fall season fisheries, but impacts to other listed stocks generally limit fisheries first.

Columbia River salmon fisheries are developed and regulated to meet conservation standards. Fisheries are managed to operate within the impact limits set for ESA listed stocks, meet the objectives for healthy Columbia River natural stocks, and ensure brood stock needs are met for hatchery salmon. Mainstem Columbia River fisheries are also developed and managed to remain within the requirements of the 2008 – 2017 US v. Oregon Management Agreement which include Tribal/Non-Tribal sharing agreements. All 2016 data is preliminary and subject to change. This section includes harvest from Columbia River fisheries that are considered to be of the interest to PSC; therefore, the data may not match other reports that include total harvest.

Winter-Spring Fisheries

Non-Tribal Net

The mainstem Winter/Spring commercial fishery has operated under mark-selective fishery regulations since 2002. In 2016, the winter/spring salmon season consisted of six fishing periods (65 hours total) between March 29 and June 8. The fishery occurred downstream of Bonneville Dam, with time, area, and gear restrictions in place. Landings included 3,300 hatchery adult spring Chinook kept (1,900 non-adipose fin clipped released). Additional fisheries occur in off-channel areas (Select Areas) in the Columbia River estuary and from Wanapum tribal fisheries upstream of Priest Rapids Dam but are not reported in this document.

Preliminary adult Spring Chinook handle in the 2016 Winter/Spring Commercial non-Tribal drift-net mark-selective fishery.					
System	Area	Chinook Kept	Chinook Released	Total Handle	% Kept
Columbia River	Below BON (LCR)	3,300	1,900	5,200	63%

Sport

Mainstem Columbia River mark-selective sport fisheries began in 2001. The area below Bonneville Dam was open January 1 – April 9, May 13-15, May 20-22, May 27-30 and June 3-15 for hatchery Chinook retention. Catch estimates include 12,700 hatchery adult spring Chinook (3,800 non-adipose fin clipped released). The area from Bonneville Dam upstream to the Oregon/Washington border (17 miles upstream of McNary Dam) was open March 16 – May 8 and May 13-15. Catch estimates for this area total 1,500 hatchery adult spring Chinook (300 non-adipose fin clipped released). The Snake River fishery structure included three specific catch areas open on a days-per-week rotation. The fishery opened in late April and continued into late May. One area re-opened for two days June. Catch in the Snake River fishery totalled 1,300 hatchery adult spring Chinook (300 non-adipose fin clipped released). Fisheries also occur in tributaries but are not reported in this document.

Preliminary adult Spring Chinook handle in the 2016 Winter/Spring sport mark-selective fishery.					
System	Area	Chinook Kept	Chinook Released	Total Handle	% Kept
Columbia River	Below BON (LCR)	12,700	3,800	16,500	77%
Columbia River	BON to WA-OR S/L	1,500	300	1,800	83%
Snake River	Washington Waters	1,300	300	1,600	81%

Tribal

Tribal mainstem winter/spring fisheries occur from January 1 through June 15. Tribal mainstem fisheries are not mark-selective. Tribal fisheries are conducted in the mainstem Columbia River from just downstream of Bonneville Dam upstream to McNary Dam (Zone 6). Spring season fisheries include three fishery sectors, a ceremonial permit gillnet fishery, a platform and hook and line fishery and a commercial gillnet fishery. The platform and hook and line fishery was open for subsistence throughout the winter/spring period and for commercial use in the later part of the spring. Harvest estimates from the combined ceremonial, subsistence and commercial fisheries totalled 17,059 upriver spring Chinook. Fisheries are also conducted in Zone 6 tributaries, and in Columbia and Snake River tributaries upstream from McNary Dam. Tributary harvest (including Snake Basin harvest) is not reported in this document.

Summer Fisheries

Non-Tribal Net

Summer season commercial fisheries are not mark-selective. A total of two fishing periods (16 hours total) occurred, one on June 16 and the other on June 11 in the area below Bonneville Dam. Time, area, and gear restrictions were in place for all summer season commercial fisheries. Landings are estimated at 3,000 upper Columbia summer Chinook.

Sport

Summer season fisheries occurred from June 16-July 31 from the Astoria-Megler Bridge near the mouth of the Columbia River upstream to Priest Rapids Dam (PRD). The fishery was mark-selective the entire season. Catch estimates below Bonneville Dam (BON) total 3,100 adult Chinook kept (4,200 non-adipose fin clipped released). Catch estimates from Bonneville Dam upstream to Priest Rapids Dam total 500 adult Chinook kept (600 non-adipose fin clipped released). The majority of harvest occurs in fisheries upstream of Priest Rapids Dam and in tributaries, which are not reported in this document.

Preliminary adult Summer Chinook handle in the 2016 sport mark-selective fishery.					
System	Area	Chinook Kept	Chinook Released	Total Handle	% Kept
Columbia River	Below BON (LCR)	3,100	4,200	7,300	42%
Columbia River	BON to PRD	500	600	1,100	45%

Tribal

Summer season fisheries occurred from June 16 through July 31. Treaty Tribal mainstem fisheries are not mark-selective. Treaty Tribal fisheries are conducted in the mainstem Columbia River from just downstream of Bonneville Dam upstream to McNary Dam (Zone 6). Seven weekly commercial gillnet

fishing periods were conducted June 16 – July 31. Platform and hook and line fisheries also occurred throughout the season, and fish were sold commercially or retained for subsistence use. Harvest estimates total 20,519 adult upper Columbia summer Chinook from mainstem fisheries. Minor summer season fisheries were also conducted in some Zone 6 tributaries and in tributaries upstream of McNary Dam. Tributary harvest is not reported in this document. The Colville and Wanapum tribes conduct C&S fisheries upstream of Priest Rapids Dam, but harvest is not reported in this document.

Fall Fisheries

Non-Tribal Net

Fall season mainstem fisheries are typically categorized into early and late fall seasons. The early fall season generally encompasses the month of August, whereas the late fall season generally begins in mid-September and continues through October. Time, area, and gear restrictions were in place for all fall season commercial fisheries. In 2016 the early fall season consisted of 2-3 periods per week during August 7 – 31. The late fall season was brief due to ESA constraints, consisting of only two periods in September (September 18 and September 22).

A small mostly mark-selective seine fishery (only two days were non mark-selective) also occurred during August 22 – September 30. Harvest estimates total 58,900 fall Chinook (100 non-adipose fin clipped released) for the entire season (all gear types).

Preliminary adult Fall Chinook handle in the 2016 Commercial non-tribal seine net mark-selective fishery.					
System	Area is Below BON. Gear type is:	Chinook Kept	Chinook Released	Total Handle	% Kept
Columbia River	Beach Seine	1	0	1	100%
Columbia River	Purse Seine	1,000	100	1,100	91%

Sport

Fall season fisheries are mark-selective for Coho and in recent years have included a brief mark-selective period for Chinook in the Buoy 10 area and in an 80-mile stretch in the lower Columbia River from the Tongue Point line upstream to Warrior Rock, which is near the mouth of the Columbia River. The Buoy 10 fishery was open August 1- December 31; Chinook retention was allowed the entire season with mark-selective regulations in place intermittently in August and September. Regulations at Buoy 10 include minimum size limits for Chinook (24-inches) and Coho (16-inches). Released fish would include adult and jack hatchery and wild fish that did not meet the size requirement, adult and jack fish requiring released under any mark-selective regulations and adult and jack fish requiring release under non-retention regulations. Buoy 10 catch estimates include 17,800 Chinook kept and 9,000 hatchery Coho kept. Released fish (hatchery, wild, adults and jacks) include 7,500 Chinook and 4,600 Coho. The lower Columbia River (LCR) mainstem sport fishery from the Rocky Point – Tongue Point line upstream to Bonneville Dam was open August 1 – December 31, except for a brief closure in late October. In the area from the Rocky Point – Tongue Point line upstream to the Lewis River, mark-selective rules for Chinook were in effect September 10-30. Catch estimates for the LCR sport fishery include 25,100 adult Chinook. The mainstem sport fishery from Bonneville Dam to the Highway 395 Bridge (near Pasco, Washington) was open August 1 – December 31. Catch estimates for this area total 5,600 adult fall Chinook. Additional fisheries occur on the Columbia River in the Hanford Reach area (downstream of Priest Rapids Dam), in tributaries and in the Snake River but are not reported in this document.

Preliminary adult Fall Chinook handle in the 2016 sport mark-selective fishery.					
System	Area	Chinook Kept	Chinook Released	Total Handle	% Kept
Columbia River	Buoy 10	17,800	7,500	25,300	70%
Columbia River	LCR Sport	700	1,800	2,500	28%
System	Area	Coho Kept	Coho Released	Total Handle	% Kept
Columbia River	Buoy 10	9,000	4,600	13,600	66%

Tribal

Fall season fisheries occur from August 1 through December 31. Tribal fisheries are not mark-selective. Tribal fisheries are conducted in the mainstem Columbia River from just downstream of Bonneville Dam upstream to McNary Dam (Zone 6). Platform and hook and line fisheries were open and allowed commercial sales through Dec 31. The commercial gillnet fishery consisted of nine weekly fishing periods August 22 – October 21. Preliminary harvest estimates for all fall season fisheries total 153,440 adult fall Chinook and 6,027 adult coho. Fisheries are also conducted in some Zone 6 tributaries and in the Snake and Clearwater Rivers. Harvest of Chinook in tributary fisheries is not reported in this document.

PUGET SOUND FISHERIES

In 2016, Puget Sound marine fisheries of interest to the Pacific Salmon Commission were regulated to meet conservation and allocation objectives for Chinook, Coho, Chum, and Sockeye salmon stocks, per Tribal-State agreement. For Puget Sound Chinook listed under the ESA, fisheries were managed according to the Puget Sound Chinook Harvest Management Plan (PSIT and WDFW 2010). This management plan defines limits to total exploitation rates for natural stocks and was determined by the National Marine Fisheries Service (NMFS) to be consistent with requirements specified under the ESA 4(d) Rule.

Release requirements were applied to many sport and net fisheries for Chinook, Coho, and Chum salmon, the latter to protect ESA-listed Hood Canal and Strait of Juan de Fuca summer Chum.

Puget Sound marine fisheries were constrained by the need to meet management objectives for ESA listed Puget Sound Chinook, including Nisqually, Skokomish, and Puyallup River Chinook. Skagit, Stillaguamish, and Snohomish Coho, were the primary Coho management units of concern for managing fisheries in the Strait of Juan de Fuca, San Juan Islands, and Puget Sound.

Strait of Juan de Fuca Sport

Selective Chinook retention was allowed for sport fishing in salmon management Area 5 from February 16 – April 10 and Area 6 from December 1, 2015 – March 18, 2016. Sport fishing regulations allowed retention of marked Chinook July 1 through August 15 in Areas 5 and 6. Coho retention was not permitted except within Dungeness Bay for hatchery Coho during October. An additional mark-selective fishery for Chinook is open from December 1- 31, 2016 in Area 6. The preliminary estimate for Area 5 Chinook retained for the entire open fishing period July 1 – August 15 was 3,395 fish.

Preliminary estimates of Chinook retained, released (legal and sub-legal size), and the legal-size mark rate in the Area 5 sport mark-selective fishery, July 1 – August 15, 2016.			
Chinook retained	Chinook released	Total encounters	Mark % (legal size)
3,395	21,424	24,819	73%

A detailed report of this summer period sport fishery, including catch, effort and results of sampling and monitoring programs, will be available from the Washington Department of Fish and Wildlife in early 2016.

Strait of Juan de Fuca Tribal Troll (Area 4B, 5, and 6C)

During the winter Tribal troll fishery in Areas 4B, 5, and 6C (November 1, 2015 – April 15, 2016), 300 Chinook were caught. In the summer, Tribal troll fishery in Areas 5 and 6C only (June 1 – September 30, 2016), 100 Chinook and zero Coho were caught. The Tribal catch estimates from this area do not include catch from Area 4B during the May-September PFMC management period, which have been included in the North of Cape Falcon Tribal ocean troll summary.

Strait of Juan de Fuca Tribal Net

Preliminary estimates of the 2016 catch in the Strait of Juan de Fuca Tribal net fisheries are 300 Chinook and 400 Coho salmon.

San Juan Islands Net (Areas 6, 7, and 7A)

Preliminary estimates of the 2016 catch in the San Juan Island net fishery directed at Sockeye or Chum salmon total and 500 Coho salmon for the Non-Tribal fishery. Tribal fishery landings from this area for all gear types total 100 Chinook and 3,400 Coho.

San Juan Islands (Area 7) Sport

Marked Chinook retention was allowed in the entire area for the period December 1, 2015 – March 13, 2016. The numbers of Chinook retained and released by anglers during this fishery were estimated by an intensive sampling program and are presented in the table below. A detailed report of this fishery, including catch, effort and results of sampling and monitoring programs, is available from the Washington Department of Fish and Wildlife. The southern and south-eastern (Rosario Strait) portions of this catch area were closed August 1 – September 30 to protect Puget Sound Chinook salmon. Chinook retention was allowed July 1 – October 31, with unmarked Chinook released during the months of July and October. Additional sub area closures are described in the Washington State Sport Fishing Rules Pamphlet. Catch estimates and sampling information for this area for the period August 1 – October 31 are not available at this time.

Estimated Chinook retained, released (legal and sub-legal size) and the legal size mark rate in the Area 7 sport mark-selective fishery, December 1, 2015 – March 13, 2016.			
Chinook retained	Chinook released	Total encounters	Mark % (legal size)
2,591	10,552	13,143	58%

Estimated Chinook retained, released (legal and sub-legal size) and the legal size mark rate in the Area 7 sport mark-selective fishery, July 1-31, 2016.			
Chinook retained	Chinook released	Total encounters	Mark % (legal size)
1,184	4,805	5,989	42%

Inside Puget Sound (Areas 8-13) Sport

Mark-selective sport fisheries directed at hatchery Chinook were conducted in Area 8.1 (Skagit Bay & Saratoga Passage), Area 8.2 (Port Susan & Port Gardner), Area 9 (Admiralty Inlet), Area 10 (Seattle – Bremerton), Area 11 (Tacoma), and Area 12 (Hood Canal) during the winter (October, 2015 – April, 2016)

period, and in Areas 9, 10, 11, 12, and 13 (South Puget Sound) during the summer (May – September, 2016) period, as well as Area 8-2 (Tulalip Bubble).

Detailed reports of these fisheries, including retained and released encounters, effort and mark rates from sampling and monitoring programs, will be available from the Washington Department of Fish and Wildlife in the spring of 2017.

Mark-selective sport fisheries directed at hatchery Coho were conducted in Area 8-2 (Tulalip Bubble) Saturdays and Sundays only from September 17-25, 2016, Area 10 (Sinclair Inlet) July 1 – September 30, 2016, and Area 13 October 1 – December 31, 2016.

Puget Sound Chinook mark-selective sport fisheries conducted in marine areas during the period October 1, 2015 through December 31, 2016.	
Areas	Season
8.1 & 8.2	November 1, 2015 – April 3, 2016; Tulalip Bubble only: Fridays, Saturdays, Sundays and Mondays June 24 – September 5, 2016; Tulalip Bubble only: Saturdays and Sundays September 10- 25, 2016
9	January 16 – April 10, 2016; July 16 – August 4, 2016; November 1-30, 2016
10	October 1-18, 2015; July 16 – August 15, 2016; November 1 – December 31, 2016; Sinclair Inlet: July 1 – September 30, 2016
11	February 1 – April 30, 2016; June 24 – August 19, 2016
12	February 1 – April 30, 2016; July 1 – December 31, 2016
13	January 1 – April 30, 2016, June 24 – August 31, 2016; October 1 – December 31, 2016

Puget Sound Marine Net (Areas 8-13 & 7B-D)

To achieve conservation objectives for natural Puget Sound Chinook and Coho, limited marine net fishing opportunities directed at returns of hatchery Chinook and Coho were planned for 2016. Many Puget Sound Coho stocks returned in significantly larger numbers than was forecast pre-season. Chinook and Coho were also intercepted in fisheries directed at Chum salmon. A total of 43,200 Chinook and 188,500 Coho were landed in Tribal Puget Sound marine net fisheries (Areas 8-13 & 7B-D) during 2016. Non-Tribal net fishery landings from these areas total 6,600 Chinook and 13,900 Coho.

Puget Sound Rivers Fisheries

Tribal net and non-Tribal sport fisheries directed at salmon in this region were implemented based upon pre-season, Tribal-State agreements and subject in part to in-season adjustment. Due to unexpectedly strong returns of many Puget Sound Coho stocks, a number of terminal freshwater fisheries for Coho were implemented in 2016 where none had been planned pre-season. The Net harvest (in Puget Sound Rivers by Tribal fisheries) included catch from river systems in the Strait of Juan de Fuca, Hood Canal, and Puget Sound. A total of 27,600 Chinook and 69,700 Coho were landed in Puget Sound River net fisheries during 2016.

Mark-selective fisheries directed at Chinook salmon were also conducted in the following Puget Sound Rivers with PSC Chinook coded wire tag (CWT) exploitation rate indicator stocks or double index tag (DIT) groups:

Chinook mark-selective sport fisheries conducted in Puget Sound Rivers, 2016.	
River	Season
Nooksack River	September 1 - 30
Cascade River (Skagit)	June 24 - July 15
Skagit River	June 24 - July 15
Skykomish River	June 24 - July 31
Nisqually River	January 1 - 5; July 1 - August 31
Carbon River	September 10 - 24

A Coho mark-selective fishery occurred on the Skagit River and Cascade River from September 28 - November 30, 2016. During 2016, no other mark-selective sport fisheries were conducted in any Puget Sound Rivers with PSC Coho CWT exploitation rate indicator stocks or DIT groups.

REFERENCES

Pacific Salmon Treaty (PST) Act of 1985. 2008 Agreement. U.S.-Canada. Public Law 99-5, 16 U.S.C. 3631.

Puget Sound Indian Tribes and Washington Department of Fish & Wildlife (PSIT and WDFW). 2010. Comprehensive Management Plan for Puget Sound Chinook: Harvest Management Component. Northwest Indian Fisheries Commission, Olympia, Washington. 237 p.

Pacific Fishery Management Council (PFMC). 2008. Fishery Regulation Assessment Model (FRAM): An Overview for Coho and Chinook v3.0. Pacific Fishery Management Council, Portland, Oregon. 43 p.

Table 15. - Preliminary 2016 Landed Chinook Catch for Washington and Oregon Fisheries of Interest to the Pacific Salmon Commission.
Values are presented in number of fish rounded to the nearest 100. ⁹

Values are presented in number of fish rounded to the nearest 100.

Fisheries	2016			Landed				
	Preseason ^{8/}		Preliminary Landed	2015	2014	2013	2012	2011
	Total Mortality ^{1/}	Landed ^{2/}						
OCEAN FISHERIES								
Commercial Troll								
Neah Bay and La Push (areas 3,4,4B) ^{3/}	58,500	51,500	28,100	73,600	77,000	63,200	78,800	42,800
Columbia Ocean Area and Westport (area 1,2) ^{4/}	37,500	23,500	14,400	51,400	39,400	28,300	21,000	18,300
Sport (see text for quota information)								
Neah Bay (area 4)	7,000	6,200	3,300	8,500	5,900	6,200	5,600	3,000
La Push (area 3)	2,300	2,000	300	2,400	1,600	2,400	1,300	1,500
Westport (area 2)	18,600	16,600	8,400	19,100	23,500	13,700	19,500	19,100
Columbia Ocean Area (area 1)	13,700	10,200	6,000	12,200	11,300	8,500	9,100	7,200
INSIDE FISHERIES								
Sport ^{10/}								
Strait of Juan de Fuca (area 5,6)	17,500	11,100	na	11,800	11,100	14,900	13,900	9,500
San Juan Islands (area 7)	9,800	7,300	na	8,600	9,200	9,500	5,800	6,500
Puget Sound Marine (area 8-13)	16,400	10,000	na	9,000	12,100	16,600	22,000	11,600
Puget Sound Rivers ^{12/}	8,700	8,600	na	11,100	11,800	19,600	23,200	18,200

North WA Coastal Rivers	na	na	na	2,100	1,100	2,900	1,600	2,300
Grays Harbor ^{7/}	na	na	na	3,800	1,200	3,800	4,600	3,400
Columbia River (Spring) ^{6/}	na	na	15,500	23,100	21,400	8,400	17,000	16,100
Columbia River (Summer) ^{6/}	na	na	3,600	6,700	2,300	2,100	3,200	5,500
Columbia River (Fall) (incl. Buoy 10) ^{6/}	na	na	48,600	91,300	63,000	74,500	47,000	44,300
Commercial^{11/}								
Strait of Juan de Fuca net and troll (area 4B,5,6C)	8,900	6,000	700	5,900	6,100	4,100	3,900	4,200
San Juan Islands (area 6,7, 7A)	6,400	6,300	100	4,700	6,900	4,000	400	5,700
Puget Sound Marine (8-13,7B-D)	34,200	33,500	49,800	33,100	28,400	70,100	75,700	63,200
Puget Sound Rivers ^{12/}	29,500	29,500	27,600	23,400	21,900	34,400	38,300	37,400
North WA Coastal Rivers	na	na	8,800	17,300	20,200	14,400	12,800	11,800
Grays Harbor (area 2A-2D) ^{7/}	na	na	2,100	10,600	5,100	2,900	5,300	8,300
Columbia River Net (Winter/Spring) ^{8/}	na	na	20,400	37,600	28,200	11,200	23,800	20,100
Columbia River Net (Summer) ^{8/}	na	na	23,500	41,700	22,200	15,300	9,500	25,600
Columbia River Net (Fall) ^{8/}	na	na	na	343,900	365,900	312,500	119,800	183,600

Table 15 Footnotes:

^{1/} Estimates of total mortality (not adjusted for adult equivalents) include non-retention mortality. Total Mortality is estimated by Fishery Regulation Assessment Model (FRAM) as catch + incidental mortality, where incidental mortality = drop off + non-retention mortality (PFMC 2008).

^{2/} For the ocean fisheries, this column shows the Chinook troll and recreational quotas used for 2016 pre-season fishery planning as distributed by ocean area (Landing Quotas = Landed). See text for any in-season adjustments.

^{3/} Includes Area 4B catch during the PFMC management period (May 1 – September 15); Area 4B Treaty troll catch outside PFMC period included under Strait of Juan de Fuca net and troll (October-April).

^{4/} Includes Oregon troll catch in Area 1

^{5/} FRAM modeled pre-season fishery impacts cover the current fishery planning year, for Chinook defined as May 1 through April 30.

^{6/} Mainstem retained sport catch only (upstream to McNary Dam for spring, Priest Rapids Dam for summer and to Hwy 395 for fall). See tables 10, 22-23 in the current Joint Staff Report regarding spring and summer Chinook and tables 25-27 in the annual fall report. http://wdfw.wa.gov/fishing/crc/staff_reports.html.

^{7/} Includes Grays Harbor catch, as well as catch from the Chehalis and Humptulips Rivers and their tributaries for sport and Chehalis and Humptulips Rivers for net estimates.

^{8/} Mainstem retained catch only, includes tribal C&S and Commercial from all gear types and non-tribal (Columbia River mouth upstream to McNary Dam). Catch data from annual Joint Staff Reports. Winter and spring catch Tables 7 (Tribal) and T18 (non-Tribal). Summer catch is in Table 10. Fall catch from annual fall report T21, 23 and 29. http://wdfw.wa.gov/fishing/crc/staff_reports.html.

^{9/} Includes catch from mark-selective fisheries as shown in table 3.

^{10/} Sport data after March 2015 are preliminary. All data subject to change.

^{11/} Includes non-tribal & tribal commercial, as well as tribal C&S for all gear types.

^{12/} Chinook fisheries in Puget Sound Rivers are modeled using the Terminal Area Management Module (TAMM), based upon FRAM output of terminal run sizes. Total Mortality is estimated in TAMM as catch + non-retention mortality (PFMC 2008).

Table 16. - Preliminary 2016 Landed Coho Catch for Washington and Oregon Fisheries of Interest to the Pacific Salmon Commission.

Values are presented in number of fish rounded to the nearest 100. ^{6/}

Fisheries	2016			Landed				
	Prescason ^{9/}							
	Total Mortality ^{1/}	Landed ^{2/}	Preliminary Landed	2015	2014	2013	2012	2011
OCEAN FISHERIES								
Commercial Troll								
Neah Bay and La Push (area 3,4,4B) ^{3/}	1,000	-	-	4,100	59,600	48,800	38,300	14,100
Columbia Ocean Area and Westport (area 1,2) ^{10/}	3,200	-	-	4,800	19,000	5,300	2,700	2,900
Sport (see text for quota information)								
Neah Bay (area 4)	1,700	-	100	7,800	5,600	6,500	7,500	3,100
La Push (area 3)	700	-	-	600	4,600	2,800	2,200	2,100
Westport (area 2)	6,200	-	-	30,700	54,500	20,400	11,900	13,800
Columbia Ocean Area (area 1)	21,800	18,900	18,600	44,600	75,100	20,500	11,400	26,700
INSIDE FISHERIES								
Sport ^{7/}								
Strait of Juan de Fuca (area 5,6)	700	-	na	62,900	63,000	41,300	76,200	21,400
San Juan Islands (area 7)	400	-	na	3,700	2,000	2,600	2,200	900
Puget Sound Marine (area 8-13)	5,800	4,000	na	77,200	59,200	72,100	91,300	34,500

Puget Sound Rivers	4,500	4,200	na	18,600	17,900	70,000	43,500	40,300
North WA Coastal Rivers	200	200	na	3,700	8,900	8,000	3,400	7,900
Grays Harbor ^{5/}	3,100	3,000	na	8,200	27,300	21,200	18,300	14,600
Columbia River Buoy 10 ^{4/11/}	23,800	20,000	9,000	36,900	57,700	7,600	7,400	7,600
Commercial ^{8/}								
Strait of Juan de Fuca net and troll (area 4B,5,6C)	1,200	1,100	400	1,700	2,300	2,700	3,500	2,700
San Juan Islands (area 6,7,7A)	4,100	3,500	4,000	4,000	19,800	19,700	10,500	11,300
Puget Sound Marine (area 8-13,7B-D)	67,800	66,300	202,400	28,800	108,400	168,500	236,300	136,500
Puget Sound Rivers	13,400	13,100	69,700	17,300	73,700	136,600	123,600	89,000
North WA Coastal Rivers	29,600	29,000	49,800	18,300	101,100	44,000	39,500	82,800
Grays Harbor (area 2A-2D) ^{5/}	5,400	5,300	1,800	12,600	67,200	30,400	44,000	32,300

Table 16 Footnotes:

^{1/} Estimates of total mortality include non-retention mortality. Total Mortality is estimated by Fishery Regulation Assessment Model (FRAM) as catch + incidental mortality, where incidental mortality = drop off + non-retention mortality (PFMC 2008).

^{2/} For ocean fisheries this column shows the Coho troll and recreational quotas used for 2016 pre-season fishery planning as distributed by ocean area (Landing Quotas = Landed). See text for any in-season adjustments.

^{3/} Includes area 4B catch during the PFMC management period (May 1 – September 15); area 4B Treaty troll catch outside the PFMC period included under Strait Juan de Fuca net and troll (October-April).

^{4/} Retained catch only. See table 26 in the current Fall Joint Staff report available on line at http://wdfw.wa.gov/fishing/crc/staff_reports.html.

^{5/} Includes Grays Harbor catch, as well as catch from the Chehalis and Humptulips Rivers; their tributaries are included in sport estimates only.

^{6/} Includes catch from mark-selective fisheries where estimates are available.

^{7/} Sport data for the most recent two years are preliminary. All data subject to change.

^{8/} Includes Non-Tribal and Tribal commercial and take home, as well as Tribal ceremonial and subsistence (C&S) for all gear types. Starting in 2012, the Copalis, Moclips, and Ozette Rivers have been removed from landed catch.

^{9/} FRAM modeled pre-season fishery impacts cover the current fishery planning year, for Coho defined as January 1 through December 31.

^{10/} Includes Oregon troll catch in Area 1

^{11/} Sport data after March 2013 are preliminary. For Buoy 10, see tables 25 in the annual fall report.

Table 17. - Mark-Selective Chinook and Coho Fisheries by Area and Year. "Yes" denotes that a mark-selective fishery occurred, even if it only occurred in a subset of the fishing area, season, gear type, or user group.

Selective Coho	2016	2015	2014	2013	2012	2011	2010	2009
Ocean Troll								
Cape Flattery & Quillayute (Areas 3/4)	no	yes	yes	yes	yes	yes	yes	yes
Columbia R & Grays Harbor (Areas 1 & 2)	no	yes	yes	yes	yes	yes	yes	yes
Ocean Sport								
Neah Bay (Area 4)	no	yes	yes	yes	yes	yes	yes	yes
LaPush (Area 3)	no	yes	yes	yes	yes	yes	yes	yes
Grays Harbor (Area 2)	no	yes	yes	yes	yes	yes	yes	yes
Col. R. (Leadbetter Pt. to Cape Falcon)	yes	yes	yes	yes	yes	yes	yes	yes
Inside Fisheries								
Sport								
Juan de Fuca (Areas 5 & 6)	yes	yes	yes	yes	yes	yes	yes	yes
San Juan Islands (7)	no	yes	yes	yes	yes	yes	yes	yes
Puget Sound Sport (Areas 8-13 all year)	yes	yes	yes	yes	yes	yes	yes	yes
Puget Sound Rivers	yes	yes	yes	yes	yes	yes	yes	yes
North WA Coastal Rivers	yes	yes	yes	yes	yes	yes	yes	yes
Grays Harbor (Areas 2-2)	yes	yes	yes	yes	yes	no	yes	yes
Willapa Bay (Area 2-1)	no	yes	no	no	no	no	yes	no
Columbia River Buoy 10	yes	yes	yes	yes	yes	yes	yes	yes
Commercial								
North WA Coastal Rivers	no	no	no	no	no	no	no	no
Grays Harbor (Areas 2A-2D)	yes	yes	yes	no	no	yes	yes	yes
Willapa Bay (Area 2-1)	no	no	no	no	no	no	yes	no
Columbia River Net/ - Fall	no	yes	yes	yes	no	no	no	no
Strait of Juan de Fuca (Areas 4B/5/6C) Net & Troll	no	no	no	no	no	no	no	no
San Juan Islands (Areas 6, 7 & 7A)	yes	yes	yes	yes	yes	yes	yes	yes
Puget Sound Marine (Areas 8 - 13)	yes	no	no	no	no	no	yes	no
Puget Sound Rivers	no	no	no	no	no	no	no	no
Selective Chinook	2016	2015	2014	2013	2012	2011	2010	2009
Ocean Troll								
Cape Flattery & Quillayute (Areas 3/4/4B)	no	no	no	no	no	no	no	no
Columbia. R & Grays Harbor (Areas 1&2)	no	no	no	no	no	no	no	no
Ocean Sport								
Neah Bay (Area 4)	no	yes	yes	yes	yes	yes	yes	no
La Push (Area 3)	no	yes	yes	yes	yes	yes	yes	no
Grays Harbor/Westport (Area 2)	no	yes	yes	yes	yes	yes	yes	no
Col. R./Ilwaco (Leadbetter Pt. to Cape Falcon)	no	yes	yes	yes	yes	yes	yes	no

Inside Fisheries

Sport

Juan de Fuca (Area 5&6)	yes	yes	yes	yes	yes	yes	yes	yes
San Juan Islands (Area 7)	yes	yes	yes	yes	yes	yes	yes	yes
Puget Sound Sport (Areas 8-13)	yes	yes	yes	yes	yes	yes	yes	yes
Puget Sound Rivers	yes	yes	yes	yes	yes	yes	yes	yes
North WA Coastal Rivers	yes	yes	yes	yes	yes	yes	yes	yes
Grays Harbor (Areas 2-2)	yes	yes	yes	yes	yes	no	no	no
Columbia River Sport - Winter/Spring	yes	yes	yes	yes	yes	yes	yes	yes
Columbia River Sport - Summer	yes	yes	yes	yes	yes	yes	yes	no
Columbia River Sport - Fall	yes	yes	yes	yes	yes	no	no	no
Willapa Bay (Area 2-1)	yes	yes	yes	yes	yes	yes	yes	yes

Commercial

North WA Coastal Rivers	no	no	no	no	no	no	no	no
Grays Harbor (Areas 2A-2D)	yes	yes	yes	yes	yes	no	no	no
Willapa Bay (Area 2-1)	yes	yes	yes	yes	yes	yes	yes	yes
Columbia River Net-Winter/Spring	yes	yes	yes	yes	yes	yes	yes	yes
Columbia River Net - Summer	no	no	no	no	no	no	no	no
Columbia River Net - Fall	yes	yes	yes	yes	no	no	no	no
Strait of Juan de Fuca(4B/5/6C) Net & Troll	no	no	no	no	no	no	no	no
San Juan Islands (Areas 6, 7 & 7A)	yes	yes	yes	yes	yes	yes	yes	yes
Puget Sound Marine (Areas 8 - 13)	no	yes	no	no	no	yes	yes	no
Puget Sound Rivers	no	yes	yes	yes	yes	yes	no	no

PRELIMINARY REVIEW OF THE 2016 WASHINGTON CHUM SALMON FISHERIES OF INTEREST TO THE PACIFIC SALMON COMMISSION

This summary report provides a preliminary review of the 2016 U.S. Chum salmon (*Oncorhynchus keta*) fisheries conducted by Puget Sound salmon co-managers (Puget Sound Treaty fishing tribes and the State of Washington) in the Strait of Juan de Fuca (Salmon Management and Catch Reporting Areas 4B, 5 and 6C), the San Juan Islands and the Point Roberts area (Areas 7 and 7A) (Figure 39), conducted in compliance with provisions of Chapter 6 of Annex IV of the Pacific Salmon Treaty (PST 2008). The harvest and abundance information provided are based on preliminary data reported through November 15, 2016 and is subject to correction and revision as additional information becomes available.

Figure 39. - Puget Sound Salmon Management and Catch Reporting Areas with Chum salmon fisheries of interest to the Pacific Salmon Commission.



MIXED STOCK FISHERIES

Areas 4B, 5 and 6C

As in previous years, the Chum salmon fishery in Areas 4B, 5 and 6C was restricted to Treaty Indian fishers using gillnets. The fall Chum-directed salmon fishery opened the week of October 9, with a schedule of six days per week and continued through November 12. Effort was higher than in recent years with a total of 25,550 Chum salmon harvested (Table 18). During the fall Chum fisheries in Areas 4B, 5, and 6C, there was a reported by-catch of 338 Coho, 53 Chinook, and zero Steelhead.

Table 18. - Preliminary 2016 Chum salmon harvest report for Washington Salmon Catch Reporting Areas 4b, 5, 6c.

Areas 4B, 5, 6C	
Treaty Indian, Gill Net Only	
Time Periods	GN
Through 9/17	0
9/18-9/24	0
9/25-10/1	0
10/2-10/8	0
10/9-10/15	238
10/16-10/22	3,366
10/23-10/29	15,588
10/30-11/5	4,081
11/6-11/12	2,277
Total	25,550

Areas 7 and 7A

Chum salmon fisheries in Areas 7 and 7A are regulated to comply with a base harvest ceiling of 130,000 Chum salmon, unless a critically low level of abundance is identified for those stocks migrating through Johnstone Strait ("Inside Southern Chum salmon") (PST 2008). Chapter 6 of Annex IV specifies that U.S. commercial fisheries for Chum salmon in Areas 7 and 7A will not occur prior to October 10. Paragraph 10 (a-b) specifies run sizes below 1.0 million as critical (estimated by Canada). For run sizes below the critical threshold, the U.S. catch of Chum salmon in Areas 7 and 7A will be limited to those taken incidentally to other species and in other minor fisheries, and shall not exceed 20,000. During 2016, following Chapter 6 requirements and pre-season domestic fishery plans, U.S. commercial Chum fisheries were initiated on October 10 and continued through October 26.

Paragraph 10 (d) states that Canada will provide an in-season estimate of Fraser River Chum salmon run size no later than October 22. If that estimate is below 900,000, then the U.S. will limit its fishery to not exceed a catch of 20,000 additional Chum salmon from the day following notification. An estimated Fraser River Chum salmon run size of 1,550,000 was provided by Canada on October 19. Paragraph 10(d) further states that the total catch is not to exceed 130,000 Chum Salmon. Therefore, to ensure that the U.S. chum fishery stayed within its share while paying back the remaining Chum owed to Canada (Table 19), fishery managers tracked catches daily relative to share, and the fishery continued through October 26. Total U.S. catch between October 10 and October 26 in Areas 7 and 7A was 118,049 Chum salmon (Table 19). The Non-Treaty gillnet and purse seine fleets were open daily October 10, 12, 13, 17, 19, and 21. The Treaty Indian gillnet and purse seine fisheries were opened on October 10 and ran continuously through October 20, then reopened for one day with limited effort on October 26.

Non-Indian reef net fisheries targeting adipose-marked Coho salmon were conducted from the end of Fraser Panel control in Area 7 (September 3) until September 30, with Chum salmon retention prohibited. From October 1 through October 21, reef nets were open daily with Chum salmon retention allowed. Total Chum salmon catch in the reef net fishery was 2,334 fish.

The total 2016 Chum salmon catch by all gears in Areas 6, 7, and 7A, reported through October 26, was 118,926 (Table 20). Catch distribution, between Areas 7 and 7A, was 63% and 36% respectively. However, it should be noted that these catch reports may be incomplete as of the date of this report. Due to the low returns of Fraser River Sockeye, no Sockeye directed fisheries took place and thus no chum were harvested

prior to the October fisheries. During the fall Chum salmon-directed fisheries in Areas 6, 7 and 7A, there was a reported by-catch of 3,465 Coho, 3 Chinook, and zero Steelhead (Table 20).

By the conclusion of the 2016 chum fishing season in Areas 7/7A, the U.S. had paid back in full the Chum owed to Canada as a result of the U.S. overage that occurred in 2014. In 2014, for the first time under the 2008 PST Chum agreement, the U.S. landed the full share of 130,000 Chum salmon allowed to be caught in Area 7/7A in a non-critical year under the current Chapter 6 of the Pacific Salmon Treaty (PST) (Table 19). Additionally, during the 2014 season the U.S. exceeded its 130,000 share by 16,571 Chum. Chapter 6.10 (h) of the PST provides guidance for overage calculations, as follows: "Catches in excess of 135,000 Chum shall result in an overage being calculated by subtracting 130,000 from the total Chum catch. Overages will be accounted for by reducing the U.S. annual catch ceilings in up to two subsequent non-critical Inside Southern Chum salmon years." As shown in Table 2, the total U.S. catch (tribal and non-tribal) in Area 7/7A during 2016 was 118,049 Chum, with a payback to Canada of 11,951 Chum. Thus, during the 2015 and 2016 Chum fisheries, the U.S. paid back in full the 2014 overage of 16,571 during the subsequent two non-critical years. Further, in 2016 the U.S. did not catch 533 chum of its share, providing additional savings (Table 19).

Table 19. - U.S. 7/7A Chum Catches, 2009-2016.

Year	Total U.S. catch	Total U.S. Share	Uncaught share	Overage vs. 130K share	Number Paid Back ^{a/}	Remaining Number Owed to Canada ^{b/}
2009	24,073	130,000	105,927	0		
2010	23,404	130,000	106,596	0		
2011	60,485	130,000	69,515	0		
2012	72,866	130,000	57,134	0		
2013	79,650	130,000	50,350	0		
2014	146,571	130,000	0	16,571		
2015	124,847	130,000	0	0	5,153	11,418
2016	118,049	130,000	533	0	11,951	0

^{a/} (U.S. share of 130,000) - (Total U.S. actual catch) = Chum paid back to Canada in 2015 and 2016.

^{b/} Remaining Chum owed to Canada in the next non-critical year: (Overage in 2014 at 16,571) - (Amount paid back in 2015 and 2016) = Remaining amount of 0.

Table 20. - Preliminary 2016 Chum salmon harvest report for Washington Salmon Catch Reporting Areas 6, 7, 7A.

	Area 6		Area 7			Area 7A			Area 6,7,7A
Time Periods	GN	PS	GN	RN	Area Total	PS	GN	Area Total	Total
Through 9/24	0	0	0	0	0	0	0	0	0
9/25-10/1	0	0	0	0	0	0	0	0	0
10/2-10/8	0	0	0	581	581	0	0	0	581
10/9-10/15	57	20,742	3,924	1,753	26,419	10,283	13,051	23,334	49,810
10/16-10/22	820	44,843	2,420	0	47,263	3,463	16,313	19,776	67,859
10/23-10/29	0	600	0	0	600	0	76	76	676
10/30-11/5	0	0	0	0	0	0	0	0	0
Total	877	66,185	6,344	2,334	74,863	13,746	29,440	43,186	118,926
Gear Type Abbreviations: GN=Gill Net; PS=Purse Seine; RN=Reef Net									
10/10-11/5 By-catch	Coho: 3,465		Chinook: 3		Steelhead: 0				

PUGET SOUND TERMINAL AREA FISHERIES AND RUN STRENGTH

Pre-season forecasts for Chum salmon returns to Puget Sound predicted a fall Chum run size totalling approximately 1,183,300 fish, with 489,698 Chum predicted to return to Hood Canal and 526,060 predicted to return to South Puget Sound. As of the date of this report, in-season estimates indicate that Chum returns to Puget Sound are generally at or above forecast with some exceptions. In-season run size updates from the 2016 fall Chum fisheries in Hood Canal and South Puget Sound indicate that the Hood Canal run is above forecast at 625,900 Chum while the South Puget Sound run is below forecast at 380,000 Chum. Some Puget Sound Chum fisheries are still underway and additional in-season estimates of abundance may occur. As of the date of this report, spawning escapement surveys are in progress for most Puget Sound stocks and therefore escapement estimates are not yet available. Early indications from these surveys do, however, suggest that nearly all stocks will meet escapement goals; although, some central Puget Sound Fall Chum stocks appear to be below escapement again this year.

REFERENCES

Pacific Salmon Treaty (PST) Act of 1985, 2008 Agreement. U.S.-Canada. Public Law 99-5, 16 U.S.C. 3631.

PRELIMINARY REVIEW OF 2016 UNITED STATES FRASER RIVER SOCKEYE AND PINK SALMON

INTRODUCTION

The 2016 Fraser River Panel fishing season was implemented under Annex IV of the Pacific Salmon Treaty (PST), and guidelines provided by the Pacific Salmon Commission to the Fraser River Panel. The treaty establishes a bilateral (U.S. and Canada) Fraser River Panel (Panel) that develops a pre-season management plan and approves in-season fisheries within Panel Area waters directed at sockeye and pink salmon bound for the Fraser River (Figure 40). In partial fulfilment of Article IV, paragraph 1 of the PST, this document provides a season review of the 2016 U.S. Fraser River salmon fisheries as authorized by the Panel. Catch and abundance information presented is considered preliminary.

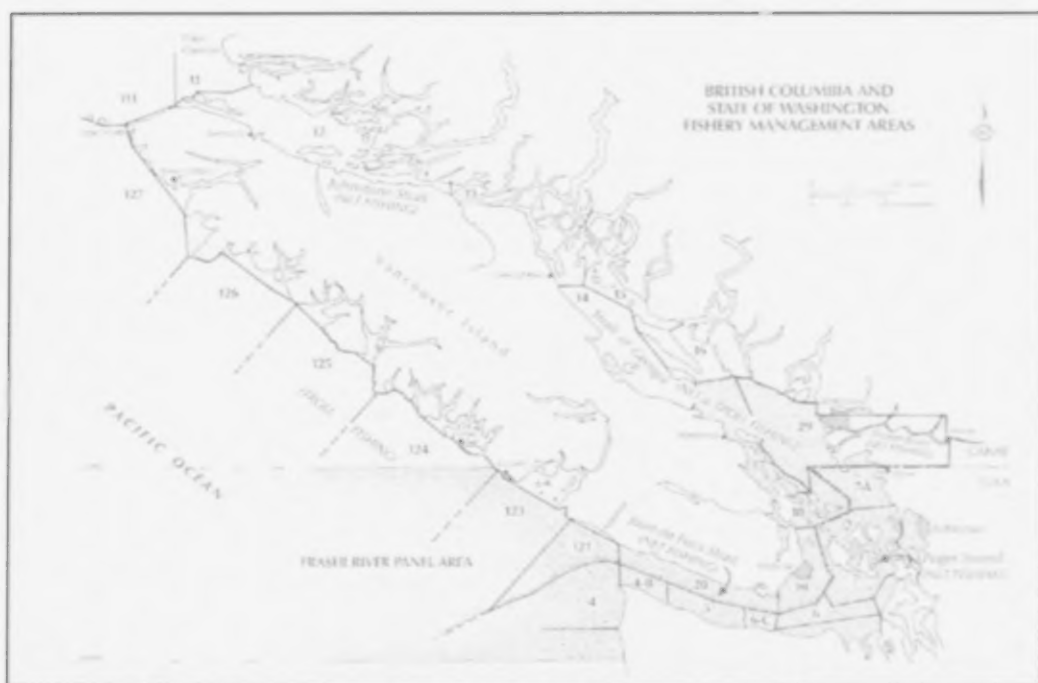


Figure 40. - British Columbia and State of Washington Fishery Management Areas, 2016. The shaded area in the figure represents the marine waters managed by the Fraser River Panel.

PRESEASON EXPECTATIONS AND PLANS

Forecasts and Escapement Goals

Pre-season run size forecasts and escapement goals by run timing group (run) at various probability levels were provided to the Panel by the Department of Fisheries and Oceans, Canada (DFO). Table 21 shows the 2016 pre-season sockeye forecasts based on the 50 percent probability level, which represent the mid-point of the range of possible run sizes for all runs. Table 21 also provides the escapement goals for the sockeye run timing groups based on the pre-season forecasted abundance. The escapement goals for all runs can change in-season as the run size estimates are updated.

Table 21. - 2016 pre-season Fraser River sockeye forecasts and escapement goals by run timing group.

	Early Stuart	Early Summer	Summer	Lates	Total
Forecast of Abundance	36,000	447,000	1,677,000	111,000	2,271,000
Escapement Goal	36,000	178,800	722,000	111,000	1,047,800

Northern Diversion Rate

Northern diversion rate is defined as the percentage of Fraser sockeye migrating through Johnstone Strait (rather than the Strait of Juan de Fuca) in their approach to the Fraser River. The preseason forecast for diversion was 75% which is above the 1990-2015 median diversion of 63%.

Management Adjustments (MA) and Environmental Conditions

Management adjustments (MA) for sockeye salmon reflect the anticipated difference between escapement estimates at Mission (minus catch above Mission) and actual spawning escapements. Adjustments adopted by the Panel are added to the gross escapement goal, effectively increasing the spawner escapement goal for that run timing group. MAs are modeled using forecasts of environmental conditions and return timing or median historical differences between estimates. Table 22 provides the pre-season projected MAs that were used for planning fisheries in 2016. In-season management adjustments use MA models that are based on both measured and forecasted temperatures and discharges or, for Late-run sockeye, upstream migration timing.

Table 22. - 2016 pre-season proportional management adjustment (pMA) and corresponding proportional difference between estimates (pDBE) for each run timing group.

Early Stuart		Early Summer		Summer		Lates	
pMA	pDBE	pMA	pDBE	pMA	pDBE	pMA	pDBE
0.69	-41%	0.59	-37%	0.11	-10%	0.47	-32%

¹ The aggregate Early Summer, Summer, and Late-Run pDBE is calculated using the component pDBEs weighted by the p50 run size forecasts. The median pDBE for Chilliwack is calculated using dominant/subdominant years, while the median pDBE for Late-run, excluding Birkenhead/Big Silver, uses 2016 cycle line years. The median pDBE for all other component groups is based on all years of historic data.

Run Timing

Run timing is temporal information about the presence of a salmon stock in a specific time and area. Run timing is an important variable when planning fisheries and predicting run size in-season. The following Area 20 50% dates (the dates when 50% of the run is forecasted to have passed through Area 20) were predicted pre-season for the major Fraser River sockeye run groups (Table 23).

Table 23. - 2016 Area 20 historic 50% run timing dates and updated pre-season timing forecasts in June.

Run Timing Group	Area 20 50% Run Timing Historic Date	Area 20 50% Run Timing (June)
Early Stuart	July 4	July 2
Early Summer	July 29	July 19
Summer	August 8	August 3
Lates	August 20	August 12

U.S. Total Allowable Catch (TAC)

Pre-season, the US TAC was established at 106,000 sockeye. The TAC available by sockeye run timing group is shown in Table 24.

Table 24. - 2016 total U.S. total allowable catch (TAC) by run timing group¹.

Run Timing Group	Pre-season U.S. TAC
Early Stuart	0
Early Summer	13,000
Summer	93,000
Lates	0
Total	106,000

¹ Based on Panel-approved final pre-season model run on July 19, 2016

Preseason Management Plans

During the pre-season planning process the Panel evaluates and adopts management approaches for Fraser sockeye that address conservation and harvest objectives for each major run timing group. The Panel develops fishing plans and in-season decision rules with the objective of meeting management goals. Managing Fraser River sockeye salmon involves a trade-off between catching abundant runs and meeting escapement objectives for less abundant run groups.

In 2016, the pre-season forecast of ~2.3 million sockeye resulted in available US TAC in the Early Summer and Summer run timing groups (Table 23) with the majority of TAC (~88%) in the Summer run group. While planning pre-season fishing schedules, the lack of TAC in Early Stuart and Late run sockeye left a narrow window for the U.S. to prosecute fisheries and minimize the impact to Early Stuart and Late run sockeye. U.S. fisheries were planned to commence in late July right before the peak of Summer run sockeye and prior to Late run sockeye showing up in abundance.

IN-SEASON MANAGEMENT

In-season, the Pacific Salmon Commission staff analyses a variety of information to produce best estimates of northern diversion, management adjustments, timing, abundance, and harvest by run timing group. Stock identification information (both genetic data and scales), age data, test fishing data, escapement counts past Mission, harvest data, and environmental information are all used to provide these in-season estimates that are critical to Fraser Panel management.

Run Assessment

The final in-season total abundance estimate for sockeye in 2016 (Table 25) was 855,000, which was 38% of the pre-season forecast. This represents the lowest sockeye return to the Fraser River since record keeping began in 1893. Across the four run timing groups, all groups returned well below their preseason forecasts. Early Stuart and Early Summer run sockeye performed similarly with respective in-season run size estimates at 50% and 54% of their pre-season forecasts. The return of Summer-run sockeye was only 31% of the preseason forecast while Late-run sockeye performed the strongest, but still at 63% of forecast.

The 2016 Fraser sockeye run timing varied across run timing groups with both Summer run and Late run sockeye arriving 3 and 4 days early (July 31 and Aug. 8 respectively; Table 26). Both Early Stuart and Early Summer run sockeye were one day later relative to preseason expectations.

Table 25. - Comparison of 2016 pre-season vs. in-season abundance estimates for Fraser River sockeye salmon by run timing group.

Run Timing Group	Pre-Season 50% Probability Forecast	In-Season Run Size Estimate	Comparison: In-Season / Pre-Season Forecast
Early Stuart	36,000	18,000	50%
Early Summer	447,000	240,000	54%
Summer	1,677,000	527,000	31%
Lates	111,000	70,000	63%
Total Sockeye	2,271,000	855,000	38%

¹ As of September 19, 2016.

Table 26. - Comparison of 2016 preliminary 50% run timing dates through Area 20 to in-season estimates.

Run Timing Group	Pre-season 50% Run Timing Date	In-season 50% Run Timing Date
Early Stuart	July 2	July 3
Early Summer	July 19	July 20
Summer	August 3	July 31
Lates	August 12	August 8

Season Description

The Fraser Panel met on every Tuesday and Friday between July 8 and August 26 to receive updates on the abundance and timing of the sockeye return from PSC staff and to review migration conditions in the Fraser River watershed. In-season abundance estimates did not match pre-season expectations so U.S. fisheries were extremely limited. In-river environmental conditions were not a major factor affecting management decisions in 2016. The following summarizes the major decisions related to U.S. fishing during the 2016 season.

July 22, 2016:

The first Panel approved U.S. commercial fishery was scheduled for July 23 to July 27 for Treaty fishers in areas 4B, 5, and 6C. Early Summer and Summer run abundances leading up to the approved fishery were tracking slightly below the preseason forecasts, however, marine area abundances appeared to be increasing based on test fishery catches. There was not enough information to update either the Early Summer or Summer run sizes.

The Panel extended the Treaty fishery in areas 4B, 5, and 6C through July 30 on July 26 and through August 3 on July 29. Sockeye catches in this fishery were small (less than 1,000 fish cumulative total).

August 2, 2016:

The Early Summer run size was downgraded to 300,000 with an associated marine area timing of July 22, three days later than the preseason forecast. Effort and sockeye catch by the Treaty Indian fishery in areas 4B, 5, and 6C remained low and the fishery was extended to August 6.

August 5, 2016:

Based on test fishery catches and numbers of sockeye passing Mission that remained well below preseason expectations, the Summer run size was downgraded to the p25 forecast level of 992,000 sockeye with an associated timing of August 6 (three days later than the preseason forecast). The Early Summer run size remained unchanged at 300,000. The lowering of the Summer run size, along with the prior change to the

Early Summer run size, eliminated fish available for U.S. TAC. The Treaty Indian fishery in areas 4B, 5, and 6C was scheduled to close August 6 and no further U.S. fisheries were planned.

U.S. fisheries remained closed for the remainder of the season. Table 27 summarizes changes to run sizes made by the Fraser Panel during the 2016 season.

Table 27. - Summary of changes to Fraser River sockeye run size estimates made by the Fraser Panel during the 2016 season.

Meeting Date	Run Timing Group	Change Made
July 19, 2016	Early Stuart	decreased to 22,000
August 2, 2016	Early Summer	decreased to 300,000
August 5, 2016	Early Stuart Summer	decreased to 18,000 decreased to 992,000
August 9, 2016	Early Summer	decreased to 250,000
	Summer	decreased to 700,000
August 12, 2016	Summer	decreased to 600,000
August 19, 2016	Early Summer	decreased to 240,000
	Summer	decreased to 520,000
	Lates	decreased to 75,000

HARVEST

U.S. harvest opportunities in 2016 were expected to be limited going into the season and in-season abundances estimates were continually downgraded from preseason expectations throughout the season with no sockeye available for U.S. TAC after the decreases to the run sizes that the Panel adopted at the August 5 meeting. The limited harvest that occurred was in Treaty ceremonial and subsistence (C&S) fisheries and Treaty commercial fisheries in areas 4B, 5, and 6C (Table 28). Treaty commercial fisheries were open for 15 days in areas 4B, 5, and 6C. There were no All Citizens fishery openings in 2016.

Table 28. - Preliminary estimate of 2016 U.S. catches of Fraser River sockeye salmon in Panel area waters.

	Treaty Indian	All Citizens
Ceremonial and Subsistence (all areas)	842	0
Commercial Catch in Areas 4B/5/6C	828	0
Commercial Catch in Areas 6/7/7A	0	0
Total Catch	1,670	0
% of U.S. Catch	100.0%	0

C. 2016 POST-SEASON REPORT FOR CANADIAN TREATY LIMIT FISHERIES

INTRODUCTION

The chapters in Annex IV of the Pacific Salmon Treaty outline the joint conservation and harvest sharing arrangements between Canada and the United States of America (U.S.) for key stocks and fisheries subject to the Treaty. On December 23, 2008, Canada and the U.S. ratified new provisions for five chapters under Annex IV of the Pacific Salmon Treaty. These chapters came into effect on January 1, 2009 and remain in force until 2018. Chapter 4, which covers Fraser River sockeye and pink salmon, was revised in July 2014 and these revisions cover fisheries in 2014 through 2019. All management regimes under Annex IV continue to be implemented by Fisheries and Oceans Canada (DFO) for the 2016 season.

Annex fisheries are reported in the order of the Chapters of Annex IV. Comments begin with expectations and management objectives, escapements (where available and appropriate) and catch results by species. The expectations, management objectives, catches and escapements focus on those stocks and fisheries covered by the Pacific Salmon Treaty.

Annually, DFO releases a Salmon Outlook document which is referenced in various sections of this report; this document provides a preliminary indication of salmon production, and associated fishing opportunities by geographic area and species stock groups called an Outlook Unit for the coming season.

Note: The catches reported in this document provide the best information available to December 1st, 2016, and may change once all catch information for 2016 has been reviewed. The catches are based on in-season estimates (hailed statistics); on-grounds counts by DFO, logbooks, dockside tallies, landing slips (First Nation fisheries), fish slip data (commercial troll and net), creel surveys and observers (recreational and commercial). Table 45 summarizes 1996-2016 catches in Canadian fisheries that have at some time been under limits imposed by the Pacific Salmon Treaty. All Southern commercial, recreational, First Nations, Excess Salmon to Spawning Requirements (ESSR) and test fisheries are reported in Appendices 8-11. The majority of the tables are incomplete as all of the catch data is not available at this time.

TRANSBOUNDARY RIVERS

Stikine River

Canada's 2017 (domestic) Transboundary Rivers Integrated Fisheries Management Plan established specific management strategies for Stikine River salmon fisheries, based on the catch sharing and management arrangements outlined in Annex IV, Chapter 1, Paragraph 3 of the Pacific Salmon Treaty (PST). Accordingly, the 2016 management plan and associated pre-season management strategy was designed to meet agreed escapement targets and the following harvest objectives: 1) to harvest 50% of the total allowable catch (TAC) of Stikine River sockeye salmon in existing fisheries; 2) to allow additional harvesting opportunities in terminal areas for enhanced sockeye that were surplus to spawning requirements; 3) to harvest up to 5,000 coho salmon in a directed commercial fishery; and 4) to harvest up to 4,740 chinook salmon in a directed fishery, in-season abundance permitting, in addition to a harvest of up to 2,300 chinook salmon as a base level catch in the directed sockeye fishery. A pre-season forecast of 33,900 chinook exceeded the pre-season allowable catch threshold run size of 28,100 which allowed for a directed chinook fishery in 2016.

The 2016 Stikine River commercial fishing season opened on May 1 (statistical week 19) and ended September 2 (statistical week 36). From statistical weeks 19 through to 23, the commercial fishing fleet engaged in a directed chinook fishery. From statistical weeks 26 through 34 a directed sockeye fishery was implemented followed by a directed coho fishery which ended in statistical week 36.

Commercial gear consisted of one 135-metre (443 ft.) gill net per licence holder. The maximum mesh size allowed was 204 mm (8") through June 4, after which time the maximum mesh size was restricted to 140 mm (5.5"). The lower Stikine commercial fishing grounds covered the area from the international (U.S. / Canada) border upstream to near the confluence of the Porcupine and Stikine Rivers, and also included the lower 10 km (6 mi.) reach of the Iskut River.

In the upper Stikine commercial fishery, located upstream from the Chutine River, fishing periods generally mirrored those in the lower Stikine commercial fishery, but lagged by one week. Commercial fishers were permitted the use of one gill net. As in past years, the commercial fishing area was extended upstream to the mouth of the Tuya River. This action was taken in order to provide for a terminal fishing opportunity on Tuya River bound sockeye salmon, specifically at sites located upstream of the Tahltan River. For the eighth consecutive year, no commercial fishing activity occurred at this site. The Tuya sockeye salmon run, which consists entirely of sockeye produced from the Canada-U.S. Stikine enhancement program, has no spawning escapement requirement since these fish are unable to return to Tuya Lake due to several velocity barriers located in the lower reach of the Tuya River. Tuya sockeye are released into Tuya Lake as young of the year juveniles.

The First Nation Food, Social, and Ceremonial (FSC) fishery located near the community of Telegraph Creek, British Columbia (B.C.) was active from the first week in May to the third week in August, with no time or gear restrictions imposed in 2016.

Most of the chinook salmon sport fishing effort in the Stikine River watershed typically occurs in the lower reach and at the mouth of the Tahltan River. Additional activity occurs less intensively in the Iskut River and other areas within the Stikine River drainage. Sport fishing activity was minimal as area and size restrictions were enacted due to a below expected (poor) return of chinook salmon returning to the Stikine River. In 2016, the Tahltan First Nation encouraged its members to not fish in a chinook salmon holding area that is located below the slide area near the beginning of the Tahltan River canyon.

Chinook Salmon

The pre-season forecast of 33,900 large (i.e. fish with a mid-eye to fork length of >660mm (~26") or a fork length of >735mm (~29") Stikine River chinook salmon, as developed by the Canada / U.S. Technical Committee for the Transboundary Rivers (TCTR) allowed for a directed chinook fishery in 2016. A pre-season forecast run size of <28,100 precludes Canada or the U.S. from scheduling a directed fishery, whereas an in-season run size of >24,500 large chinook is required to permit a targeted chinook fishery. Based on the pre-season forecast and an escapement goal of 21,000 the allowable catch (AC) in the directed chinook fishery was 4,740 and the base line catch (BLC) in the directed sockeye fishery was 2,300.

The directed chinook fishery commenced on May 1 (statistical week 19) and ended on June 4 (statistical week 23) ahead of schedule due to in-season projections that identified the chinook salmon run was well below the preseason forecast and no longer provided an allowable catch (AC) to Canada. As a result, an assessment fishery was conducted in statistical weeks 24-25 (June 5-18) which had a combined catch of 483 large and 39 jack chinook salmon. The total combined gill net catch of chinook salmon in the First Nation and commercial fisheries included 2,731 large chinook salmon and 794 jacks compared to 2006 - 2015 averages of 5,273 large chinook salmon and 1,269 jacks, while the sockeye test fishery yielded a harvest of 20 large chinook and 16 jack chinook salmon compared to the 2006-2015 averages of 17 large chinook salmon and 17 jack chinook salmon. The 2016 sport fishery is believed to have no harvest of chinook salmon due to the restrictions that were in place. The 2006-2016 averages are 45 large chinook salmon and 16 jack chinook salmon.

The preliminary post-season estimate of the terminal run was 15,335 large chinook salmon, including an in river run size based on mark-recapture data of 13,606 large chinook salmon and a total U.S. catch estimate of 1,729 large chinook salmon. Accounting for the total Canadian catch of 3,234 large chinook salmon

(includes commercial, First Nation, sport and test catches), the total system-wide spawning escapement was estimated at approximately 10,372 large chinook salmon. The lower Tahltan River rockslide, which occurred in 2014 and resulted in a velocity barrier at certain flow levels, is not believed to have impeded chinook salmon passage due to below average water levels. The escapement estimate of 10,372 is 60 % below the target SMSY escapement goal of 17,400 large chinook salmon and did not reach the escapement goal range of 14,000 to 28,000 large Chinook salmon. The post-season run size of 15,335 chinook salmon translated into no allowable harvest in Canadian or U.S. directed fisheries.

The 2016 chinook salmon escapement enumerated at the Little Tahltan weir was 923 large chinook and 320 jack chinook salmon. The escapement of large chinook salmon in the Little Tahltan River was well below both the SMSY estimate of 3,300 fish and the lower end of the escapement goal range of 2,700-5,300 large chinook salmon. The proportion Little Tahltan escapement to the Stikine wide escapement was only 3%, while on average the contribution of this stock exceeds 14%. 2016 is the tenth consecutive year that the lower end of the escapement objective was not achieved for Little Tahltan chinook salmon.

In addition to the mark-recapture study, the Little Tahltan weir project and aerial surveys, genetic samples were collected on a weekly basis from chinook salmon caught in the U.S. District 108 fishery, and from weekly catches taken in the Canadian commercial fishery. Data collected from

U.S. fisheries were used to determine the total U.S. interception of Stikine River chinook salmon while the in-river samples will be analyzed to assess stock specific run timing and run size.

Sockeye Salmon

The forecast for Stikine River sockeye salmon, as developed by TCTR, was for a terminal run size of 223,000 fish including: 129,000 Tahltan Lake origin sockeye salmon (87,000 wild and 42,000 enhanced); 38,000 enhanced Tuya Lake sockeye; and 56,000 non-Tahltan wild sockeye salmon, which constituted an above average forecast. For comparison, the previous 10-year average (-2006-2015) terminal run size was approximately 172,000 fish.

Preliminary combined catches from the Canadian commercial and First Nation gill net fisheries in the Stikine River totalled 86,729 sockeye in 2016; above the 2006 - 2015 average of 51,221 fish. The lower Stikine River commercial fishery harvested 75,752 sockeye, while the upper Stikine River commercial and First Nation fisheries harvested a total of 333 and 10,644 sockeye salmon, respectively. The preliminary estimate of the total contribution of sockeye salmon from the Canada/U.S. Stikine sockeye enhancement (i.e. the fry-planting program) to the combined Canadian First Nation and commercial catches was 31,425 fish (or 36 % of the catch).

In addition to these catches, 1,747 sockeye salmon were taken in the stock assessment test fishery located near the U.S./ Canada border. A total of 38,610 sockeye salmon was counted through the Tahltan Lake weir in 2016, 40 % above the average of 27,639 fish and above the escapement goal range of 18,000 to 30,000 fish. An estimated 12,643 fish (33 %) originated from the fry-planting program, which was close to the 30 % contribution observed in smolts leaving the lake in 2013, the principal smolt year contributing to the 2016 return. A total of 4,315 sockeye salmon were collected for broodstock and an additional 173 were removed for stock identification purposes (ESSR), resulting in a spawning escapement of 34,122 sockeye salmon in Tahltan Lake. The total estimated run size of 144,224 Tahltan Lake sockeye was approximately 12 % above the pre-season expectation of 129,000 fish.

The spawning escapements for the non-Tahltan and the Tuya stock groups are calculated using stock identification, test fishery and in-river commercial catch and effort data. The average of the test fishery and the commercial fishery catch-per-unit of effort (CPUE), which operated over the full duration of the run, were used as the principal tool in assessing the spawning ground escapements of non-Tahltan Lake and the Tuya sockeye stock groupings. Based on the run reconstructions generated from the test and commercial

fishery CPUE, the preliminary escapement estimates for 2016 were 33,092 non-Tahltan and 7,370 Tuya sockeye salmon. The non-Tahltan spawning escapement estimate was within the escapement goal range of 20,000 to 40,000 and was 10 % above the mid-point escapement goal of 30,000 sockeye salmon (above the 10 year average of 24,436 fish). The estimated escapement of 7,370 Tuya Lake sockeye salmon was below the recent 10 year average of 12,854 fish. These fish do not contribute to the natural production of Stikine River sockeye salmon due to migration barriers that obstruct entry to their nursery lake and potential spawning areas.

Based on the in-river run reconstruction of the Tahltan Lake run expanded by run timing and stock identification data in the lower river and estimated harvests of Stikine River sockeye salmon in U.S. terminal gill net fisheries, the preliminary post-season estimate of the terminal sockeye run size is approximately 238,653 fish. This estimate includes 144,224 Tahltan Lake origin fish, 33,481 Tuya Lake origin fish, and 60,948 sockeye of the non-Tahltan stock aggregate. A Stikine River run size of this magnitude is above the 2006 - 2015 average terminal run size of ~172,000 sockeye salmon and is approximately 7 % above the preseason forecast of 223,000 fish.

Based on the preliminary post season estimate, Canada had an allowable catch of 88,699 Stikine River sockeye salmon compared to the actual harvest of 86,742.

Coho Salmon

For the eighth consecutive year, most of the commercial fishing fleet remained in the fishery to harvest coho salmon resulting in a total catch of 5,346 coho salmon. A catch of 4,957 coho salmon was taken during the targeted coho fishery in statistical weeks 35-36. The total catch was above the recent 10 year average of 4,360 fish.

A coho salmon test fishery was not conducted in 2016. Incidental catches and CPUE taken in the sockeye salmon test and commercial fisheries were below average. The CPUE observed in the targeted coho salmon fishery was below average for statistical weeks 35 and 36. Aerial surveys of six index spawning sites yielded below average counts taken under excellent viewing conditions.

Joint Sockeye Salmon Enhancement Program

Joint Canada/U.S. enhancement activities continued from 2015 through 2016 with the collection of sockeye salmon eggs from Tahltan Lake in British Columbia, transportation of eggs to the Snettisham Hatchery in Alaska where they were raised to fry, and subsequent transportation and release at out-plant sites in British Columbia.

Through May 9 to 13, 2016 approximately 3.4 million fry were out-planted into Tahltan Lake. No fry were released into Tuya Lake. The fry originated from the 2015 Tahltan Lake egg-take and were mass-marked at the Snettisham hatchery with thermally induced otolith marks. Green egg to released fry survival was approximately 76%. No Tahltan Lake origin fry reared at the Snettisham hatchery were lost due to Infectious Hematopoietic Necrosis virus (IHNV). Sockeye salmon enhancement programs have been subject to IHNV outbreaks before as the disease is naturally occurring in Stikine sockeye stocks.

In the fall of 2016, approximately 5.3 million sockeye salmon eggs of a targeted 4.91 million were collected at Tahltan Lake and transported to Snettisham Hatchery in Alaska. Canada determined an increased egg take target based on escapement evaluation results in-season. As in previous years additional efforts beyond beach seining were employed to acquire brood stock including angling and temporarily holding female brood stock to mature in floating net pens in the lake. Some challenges were faced this year including similar concerns to 2014 and 2015 regarding salmon passage around a recent rock slide barrier on the Tahltan River.

Taku River

As with the Stikine River, the fishing plan developed by Canada for the Taku River was based on the arrangements in Annex IV, Chapter 1, Paragraph 3 of the PST in effect for 2009 through 2018. Accordingly, the plan addressed conservation requirements and contained the following harvest objectives: 1) harvest 20% of the TAC of Taku River sockeye salmon (adjusted as necessary according to projections of the number of enhanced sockeye), plus the projected wild sockeye in-river escapement in excess of 1.6 times the spawning escapement goal; 2) to harvest enhanced Taku River sockeye salmon incidentally to wild sockeye salmon; 3) to harvest 5,000, plus any excess over the escapement target of 70,000 coho salmon in a directed coho salmon fishery, dependent on in-river run size projections; and 4) to consider a directed chinook salmon fishery once weekly in-season estimates suggested an allowable catch.

The 2016 commercial fishing season on the Taku River opened on June 19 (statistical week 26), and closed on October 8 (statistical week 41). Fishing area and gear restrictions were as per recent years, and incorporated the maximum gill net length of 36.6 metres, established in 2008 for drift gill nets and in 2009 for set gill nets.

The Taku River commercial fishing grounds in Canada consist of the mainstem of the river from the international border upstream approximately 18 km (11 miles), to a geological feature known locally as Yellow Bluff. Almost all fishing activity takes place in the lower half of this area, downstream of the Tulsequah River.

The First Nation FSC fishery is primarily located in the lower Taku River in the same area as the commercial fishery described above. However, small numbers of fish are also harvested on the lower Nakina River and at the outlet of Kuthai and King salmon lakes. There were no time or gear restrictions imposed on the First Nation fishery in 2016.

Most of the chinook salmon sport fishing effort in the Taku watershed typically occurs on the lower Nakina River. Less intensively-used sport fishing sites exist on the Tatsatua River, the Sheslay River and other areas within the Taku River drainage. Sport fishing effort and harvest is difficult to determine to an absolute level, but are believed to be negligible for all species except chinook salmon and steelhead (due to the remote nature of the watershed and difficult access). In 2016, restrictions were in place to prohibit the retention of chinook salmon over 65 centimeters after June 19 in response to run projections that projected the minimum escapement objective would not be met.

Chinook Salmon

The bilateral pre-season forecast was for a terminal run of 29,200 large chinook salmon, approximately 8% below the previous 10-year average of 31,607 fish. The forecast generated by the Taku River chinook salmon model was 32,600 fish. However, due to persistent overestimation in recent years coupled with a pattern of decline in chinook salmon stocks in the North Pacific, the forecast was reduced by 12%. A run size of 29,200 fish was slightly above the SMSY escapement goal of 25,500 fish, and as a result, there was no allowable catch (AC) for either the U.S. or Canada, and a minor adjustment to the base level catches (BLCs) of 1,500 fish for Canada and 3,500 fish for the U.S. was required. The test fishery allocation of 1,400 large chinook was unchanged.

The catches of large chinook salmon in the Canadian fisheries were: 1,021 in the test/assessment fishery; 508 large chinook salmon captured incidentally in the directed commercial sockeye and coho salmon fisheries; 91 large chinook salmon in the First Nation FSC fishery; and an estimated 10 large chinook salmon in the sport fishery (prior to June 19). The total base level and test/assessment fishery harvest of 1,630 large chinook salmon was within the allowance of 2,900 fish. In-season run projections did not identify an AC for the Canadian directed commercial fishery.

The bilaterally agreed Taku River large chinook salmon spawning escapement estimate for 2016 was 11,484 fish which was below the SMSY target of 25,500 and the goal range of 19,000 to 36,000. The 2006-2015 average spawning escapement is 25,254 large chinook (which was associated with a higher target until 2009). During aerial surveys of five index areas, a total of 1,720 large chinook salmon were observed; this was 52% below the average of 3,603.

The Canadian catch of large chinook salmon was 70% below the 10-year average of approximately 3,000 fish (excluding test/assessment fisheries). The 2016 harvest of small chinook was 205 fish (195 commercial and 10 First Nation FSC), 64% below the 10-year average of 571 fish.

Sockeye Salmon

The Canadian pre-season run outlook for wild sockeye salmon was 200,000 fish, approximately 16% above the previous 10-year average total run size of 172,000 fish. In addition, approximately 10,300 adult sockeye salmon of Tatsamenie Lake origin were expected to return from fry out plants associated with the Canada/U.S. joint Taku sockeye salmon enhancement program. The forecasted return of enhanced Tatsamenie Lake origin sockeye salmon was 36% above the average return of 7,600 fish.

The Canadian sockeye salmon catch was 37,624 fish, of which 37,301 were taken in the commercial fishery, 200 in the First Nation FSC fishery, and 123 in assessment/test fisheries. This harvest was 81% above the 10-year average total of 20,760 fish (3rd largest on record), with the contribution of sockeye salmon from the bilateral enhancement program estimated at 4,043 fish (11% of the total Canadian catch).

To reduce by-catch of chinook salmon, the maximum permissible mesh size in the first four weeks of the directed sockeye salmon fishery which commenced in late June was 140 mm (5.5"). Projections of the total wild sockeye salmon run size, TAC, and total escapement were made frequently throughout the fishing season. As in past years, projections were based on the joint mark-recapture program, the estimated catch of Taku River sockeye in U.S. fisheries, the catch in the Canadian fishery, and historical run timing information. Projections in 2016 ranged from 118,000 in statistical week 28 (July 3-9) to 220,000 in statistical week 30 (July 17-23). The preliminary post-season estimate of run size is 294,851 fish (comprising 275,322 wild sockeye and 19,529 enhanced sockeye). Subtracting the escapement target of 75,000 from the wild run of 275,322 fish, resulted in a TAC of approximately 200,000 wild fish. The Canadian allowable catch, based on a 23% harvest share (which in turn is associated with an enhanced return of 15,001 to 25,000 fish), was 46,100 fish; the actual catch was 33,472 wild fish, representing 17% of the TAC of wild fish. Likewise, the U.S. allowable catch of wild fish, based on an 77% harvest share, was 153,900 fish; the actual catch was 77,310 fish, representing 39% of the TAC of wild fish.

The estimated spawning escapement of wild sockeye salmon in the Canadian section of the Taku River was 164,430 fish which was well above the target range of 71,000 to 80,000 fish. The escapement is 63% above the 10-year average of 101,021 fish. Based on weir counts, escapements of sockeye salmon to the Kuthai were 1,496; Little Trapper were 7,771; Tatsamenie were 32,934 and King Salmon lakes were 6,388. Escapements to all the lakes were above average in 2016 with the exception of Trapper Lake which was near average.

Coho Salmon

The catch of 9,513 coho salmon (9,466 commercial and 47 First Nation FSC) was 8% above the 10-year average of 8,793 fish. The catch during the directed commercial coho salmon fishery, i.e. after statistical week 33, was 7,483 fish. A test/assessment fishery was implemented in 2016, catching a total of 2,007 coho. Based on mark-recapture data, the preliminary bilateral estimate of the run into the Canadian section of the drainage is 99,224 fish. In accordance with PST harvest arrangements for the 2016 Taku River coho salmon season; at a run size of this magnitude, Canadian harvesters were entitled to harvest 5,000 fish for assessment purposes plus any surplus over 75,000 starting in statistical week 34. The preliminary post-

season spawning escapement estimate is 87,704 fish, 4% below the previous 10-year average of 91,675 fish. The 2016 escapement was above the recently revised target of 70,000 but within the goal range of 50,000 to 90,000 fish.

Joint Sockeye Salmon Enhancement Program

Joint Canada/U.S. enhancement activities continued from 2015 through 2016 with sockeye salmon fry hatched at Snettisham Hatchery in Alaska transported back to Tatsamenie Lake, British Columbia (where these fish were collected as eggs in 2015).

Approximately 77% of the 1.3 million sockeye salmon eggs collected in 2015 from Tatsamenie Lake survived to the fry stage at the Snettisham Hatchery in Alaska. Approximately 89,100 pre-emergent fry from one incubator were destroyed due to Infectious Hematopoietic Necrosis virus (IHNV). Sockeye salmon enhancement programs have been subject to IHNV outbreaks before and while unfortunate the losses are within normal occurrence levels.

Between May 14 and May 27, 2016 approximately 384,000 emergent sockeye salmon fry were out-planted into Tatsamenie Lake. In addition, as part of an onshore extended rearing project, approximately 86,250 fed fry were released into onshore rearing tanks and a trial net rearing pen. The project was successful with remarkably low rearing losses. Net pen reared fry were released at 4.2 grams on July 13 and Capilano trough reared fry were released at 5.6 grams on August 11. Smolt production for the year was slightly below average with a preliminary estimate of 420,000 coming off a weak brood year. A breakdown of the origin of the smolts to evaluate annual release strategies is underway pending otolith results.

No eggs were collected from King Salmon Lake in 2016 however, results of the first adult returns appeared in the Taku fishery with significant numbers and the escapement to the lake was well above average. Specific enhancement feasibility results are pending.

For 2016, the agreed bilateral Taku River enhancement production plan (TEPP) identified collection of up to 2.0 million sockeye salmon eggs from Tatsamenie Lake and 250,000 eggs from Little Trapper lake for transport to Snettisham Hatchery in Alaska for incubation and thermal marking. Approximately 2,200,000 sockeye salmon eggs were collected from Tatsamenie Lake and a new record escapement was established (33,000). Eggs were collected from Little Trapper in September in the amount of 271,000. The resulting fry will be released to Trapper Lake, upstream of a barrier, to establish a small escapement of salmon (approximated at 250 adults) for barrier passage evaluation beginning in 2020. Barrier removal project plans were established in 2016 as part of a 2016 Northern Fund project and are ongoing in support of a potential sockeye enhancement program for Trapper Lake.

Alsek River

Although catch sharing provisions for Alsek River salmon stocks between Canada and the U.S. have not yet been specified, Annex IV of the Pacific Salmon Treaty calls for the development and implementation of cooperative abundance-based management plans and programs for Alsek River chinook and sockeye salmon. In 2013, escapement goal ranges for Alsek River chinook and sockeye salmon were accepted by the Transboundary Rivers Panel, these are: 3,500 to 5,300 chinook and 24,000 to 33,500 sockeye salmon. Additionally, the escapement targets were revised for Klukshu River chinook and sockeye salmon, these are: 800-1,200 chinook and 7,500-11,000 sockeye. The principal escapement-monitoring tool for chinook, sockeye, and coho salmon stocks on the Alsek River is the Klukshu weir, in operation since 1976 by DFO in cooperation with the Champagne-Aishihik First Nation (CAFN).

Total drainage abundance programs are being investigated as part of the development of abundance-based management regimes and to accurately assess whether the escapement goals for Alsek River chinook and sockeye salmon stocks are appropriate and achievable. At this time, there are no programs in place to

estimate the drainage-wide coho salmon escapement. A large and variable proportion of the escapement of each species is enumerated at the weir on the Klukshu River. Current escapement monitoring programs include the Klukshu River weir, Village Creek counter, and post-season run reconstructions using genetic stock identification analyses which allow for annual comparisons of escapement indices. The most reliable long-term comparative escapement index for Alsek River drainage salmon stocks is the Klukshu River weir count.

The harvest estimate for the 2016 First Nation FSC fishery comprised of the fish taken from the Klukshu River weir (elders only) and an estimate of catches above/below the weir (based on the past relationship with the weir count and harvest). An estimated 10 chinook, 815 sockeye and zero coho salmon were harvested in the FSC fishery. The recent average catches are 60 chinook, 1,159 sockeye, and 4 coho salmon. Preliminary catch estimates for the Tatshenshini sport fishery were an estimated 20 chinook salmon retained, and 10 sockeye salmon retained. There were no coho recorded, although this value is considered incomplete as some effort and harvest may have occurred after monitoring ceased. The catches were 45%, 71%, and 0% of average for chinook, sockeye and coho salmon, respectively. Retention of chinook salmon was not permitted after July 26th as in-season projections suggested that the escapement objectives would not be met.

The preliminary weir count and escapement estimates of Klukshu River sockeye salmon in 2016 were 7,584 and 11,363 fish, respectively. The count of 1,405 early run fish (count through August 15) was below the average of 2,659 as was the count of 6,179 late run fish, with an average of 9,022. The total escapement of 11,363 fish was above the upper end of the escapement goal range of 7,500 to 11,000 fish. The sockeye salmon count at Village Creek was 410 fish; the average is 2,000 fish.

The most reliable comparative chinook salmon escapement index for the Alsek River drainage is considered to be the Klukshu River weir count. The preliminary chinook salmon weir and escapement estimate in 2016 was 651 fish, below the average of 1,154 fish. The 2016 escapement estimate of was below the lower end of the escapement goal range of 800 to 1,200 Klukshu River chinook salmon.

The Klukshu River coho salmon weir count was 2,141. The 2016 count, as in past years, is not considered a complete indicator of run strength as the weir is removed prior to the end of the coho salmon run to the Klukshu River.

NORTHERN BRITISH COLUMBIA (NBC) CHINOOK AGGREGATE ABUNDANCE-BASED MANAGEMENT (AABM)

Objectives and Overview

Chinook fisheries are managed by either an aggregate abundance-based management (AABM) or individual stock-based management (ISBM) regime. Allowable harvest impacts in AABM areas are determined by provisions in the Pacific Salmon Treaty and subject to domestic considerations, such as conservation and allocation. For NBC fisheries, a single AABM quota is applied to troll fisheries Pacific Fishery Management Areas (PFMA) 1 to 5, 101 to 105 and 142 and to recreational fisheries in PFMA's 1, 2, 101, 102 and 142.

Once the AABM quota was defined for the combined troll and recreational fishery, the projected recreational catch was subtracted from the quota, with the remainder allocated to the troll fishery. The entire 2016 Northern B.C. troll fishery was conducted under a system of individual transferable quotas.

The North Coast B.C. troll fishery was opened for chinook fishing from June 21 to August 1 and from August 25 to September 30. DFO managed commercial troll fisheries in the North Coast to a 3.2% exploitation rate ceiling on total WCVI chinook return to Canada. The size limit was 67 cm and barbless hooks and revival boxes were mandatory.

Preliminary estimates indicate a total catch of 190,180 chinook salmon; 147,381 caught in commercial troll fisheries and 42,800 caught in sport fisheries.

Stock Status

The pre-season abundance index for North Coast B.C. troll and Haida Gwaii sport fisheries in 2016 was 1.70, which permitted a total allowable catch of 248,000 chinook salmon in these fisheries.

No troll test fisheries were conducted in the North Coast of B.C. in 2016.

Recreational Fisheries

Sport fishing was open with a daily limit of two chinook/day and a possession limit of four chinook. An estimated 42,800 chinook were caught in the Haida Gwaii (Queen Charlotte Islands) sport fishery. A minimum size limit of 45 cm was in effect and barbless hooks were mandatory in the sport fishery. Preliminary estimates of AABM chinook releases from sport fisheries included 29,711 fish. Virtually all sport releases in AABM areas are legal sized.

Commercial Fisheries

The preliminary estimate of AABM commercial troll catch is 147,381 chinook. Preliminary estimates of AABM chinook releases from commercial troll fisheries is 1,510 legal sized fish and 12,786 sublegal sized fish.

NORTHERN BRITISH COLUMBIA CHINOOK INDIVIDUAL STOCK-BASED MANAGEMENT (ISBM)

Objectives and Overview

Fisheries included in this category are commercial net fisheries throughout north and central B.C., marine sport fisheries along the mainland coast and freshwater sport, and First Nations FSC fisheries in both marine and freshwater areas. The PST obligations in these fisheries are for a general harvest rate reduction (estimated in aggregate across fisheries) for ocean mixed stock fisheries and for stock-specific objectives (i.e., achieving the escapement goal) in terminal areas.

Stock Status

A total of 392 large chinook and 107 jacks were caught in the Tyee Test fishery on the Skeena River. The 2016 chinook catch was the lowest catch by the test fishery since 1995. Chinook catches at the Tyee Test Fishery in 1995 and 2016 were the lowest experienced since 1984.

Since assessments of the ISBM fisheries are relative to the escapements achieved in the chinook indicator stocks, a brief overview of the 2016 returns is provided. Northern B.C. terminal runs to the Nass and Skeena Rivers declined significantly after modest improvements in 2015.

Preliminary estimates of chinook escapements to the upper Nass River were 9,581. Preliminary Skeena River chinook escapements were approximately 33,297. Preliminary Atnarko River chinook escapements were estimated at 21,254, down from the record return of 57,615 chinook salmon in 2015.

First Nations Fisheries

Catches by First Nations in the North Coast exceeded 9,051 chinook in 2016. Nisga'a and Gitanyow catches from the Nass River were 5,445 chinook. Catches by First Nations fisheries in the Skeena River were estimated at 3,606 chinook. Estimates of First Nations catches on Haida Gwaii were not provided.

Catches by First Nations in the tidal portion of the Central Coast were not available at the time of this report. Non-tidal catches by First Nations included 25 chinook from Area 6 and 17 chinook from Area 7. The First Nations' non-tidal catch in Area 8 was 1,870 chinook from the Atnarko River. No chinook catches were reported by First Nations in Rivers Inlet or Smith Inlet (Areas 9 and 10).

Recreational Fisheries

Tidal Recreational Fisheries

Preliminary estimates for tidal sport catches near the mainland coast of Northern B.C. were 10,043 from a creel survey conducted in Areas 3 and 4 in 2016. The 2016 catches in the mainland sport fishery in Areas 5 and 6 were not available at the time of writing.

Tidal sport catch from lodges operating in the Smiths Inlet, Rivers Inlet, Hakai Pass and Bella Bella areas were estimated using log books. Approximately 5,559 chinook were retained at lodges in these areas in 2016, approximately half of the 2015 catch.

Non-Tidal Recreational Fisheries

The preliminary estimate from a freshwater creel survey conducted in the Skeena River below Terrace in 2016 was 2,246 large chinook and 984 jacks.

Commercial Fisheries

Commercial (A-H Fisheries includes ATP)

North Coast commercial gill net catches totalled 1,262 chinook from Areas 3 to 6 (from hauled catch data). Chinook catch in Areas 3 and 4 were 830 and 392 chinook, respectively. No chinook were reported caught in Area 5 and only 40 were caught in Area 6. These preliminary estimates of gill net catches include chinook less than 5 pounds (graded as jacks and small red fleshed chinook) not normally included for PSC accounting. Small chinook typically make up less than 5% of commercial gill net catches. Hail catch data tend to underestimate catch reported in fish slips by 25 to 30%.

Central Coast commercial gill net catches totalled 3,192 chinook with 3,185 from Area 8 and 7 from Area 7 (from hauled catch data).

Johnstone Strait commercial fisheries including Area B seine and Area D gill net were managed by South Coast and corresponding catches are reported in the South Coast section of this report.

NORTHERN BRITISH COLUMBIA PINK SALMON

Areas 3-1 to 3-4 Pink Net Catch

For 2016, Canada was to manage the Area 3-1 to 3-4 net fisheries to achieve an annual catch share of 2.49% of the annual allowable harvest (AAH) of Alaskan Districts 101, 102 and 103 pink salmon. At this time, the total return of the Alaskan Districts 101, 102 and 103 pinks was not available.

In the Canadian Northern Boundary area, pink salmon returns were anticipated to be average to below average for Area 3 and Area 4, based on brood year return strength. Actual returns to Areas 3 and 4 were below average. The 2016 preliminary Canadian pink salmon catch in Sub- areas 3-1 to 3-4 was 430,435. The Alaska stock component of this catch has yet to be estimated.

Area 1 Pink Troll Catch

For 2016, Canada was to manage the Area 1 troll fishery to achieve an annual catch share of 2.57% of the annual allowable harvest (AAH) of Alaskan Districts 101, 102 and 103 pink salmon. At this time, the total return of the Alaskan Districts 101, 102 and 103 pinks was not available.

The Canadian commercial troll fishery targeting pink salmon was open in the Northern portion of Area 1 (Dixon Entrance AB Line) from July 1 to September 30. Pink retention was also permitted during the chinook directed fishery in parts of Area 1 which opened from June 21 to August 1 and again from August 25 to September 30. Area 1 pink salmon directed effort was very minimal and the fishery harvested a total of 32,287 pink salmon. The Alaska stock component of this catch has yet to be estimated.

SOUTHERN B.C. CHINOOK AGGREGATE ABUNDANCE-BASED MANAGEMENT (AABM)

Objectives and Overview

Chinook fisheries are managed by either an aggregate abundance-based management (AABM) or individual stock-based management (ISBM) regime. Allowable harvest impacts in AABM areas are determined by provisions in the Pacific Salmon Treaty and subject to domestic considerations, such as conservation and allocation. In Southern B.C., all AABM chinook fisheries are located off the West Coast Vancouver Island (WCVI), including components of the recreational fishery, First Nations fisheries, and the Area G troll fishery.

For the period October 2015 through September 2016, the forecast chinook abundance index was 0.89 of the PST base period. Therefore, under treaty provisions, the maximum allowable catch was 133,300 chinook for WCVI AABM fisheries; which includes a 30% reduction consistent with the treaty provisions that came into effect in January 2009.

Of this total, 69,248 was the pre-season expected catch for the offshore recreational and First Nations fisheries. The remaining 64,052 chinook were allocated to the commercial fisheries (Area G and T'aaq-wiihak).

Further considerations for managing chinook catch in WCVI AABM fisheries are driven by concerns regarding the low status of natural WCVI, Lower Strait of Georgia (LGS), Fraser River Spring 42, Spring 52, Summer 52 chinook, and Interior Fraser coho populations.

Several ocean fisheries in Canada intercept WCVI origin chinook, including northern troll, Haida Gwaii recreational, WCVI troll and WCVI recreational. Ocean fisheries in Canada are limited to a 10% exploitation rate, even if PST provisions allow for a higher catch. Management measures are in place to reduce the impact of fisheries on WCVI origin chinook while still providing harvest opportunities. Continued efforts were made in 2016 to limit the impact of the troll fishery on low status chinook populations, including time and area constraints, and limits on effort (boat-days) to protect stocks of concern.

AABM chinook catch and release information from all fisheries can be found in Table 46.

Table 29. - Pre-Season Total Allowable and Preliminary Catch Estimates for October 2015- September 2016 WCVI AABM Chinook

	Pre-Season	Post-Season
WCVI AABM Abundance Index	0.89	under review
WCVI AABM chinook TAC*	133,300	under review
AABM Recreational Catch	60,000	37,809
First Nations Catch (FSC)	5,000	Under review
Maa-nulth First Nations Catch (FSC)	4,248	310**
T'aaq-wiihak Catch	7,536	6,049***
Area G Troll Catch	56,517*	49,119
Total AABM Catch	133,300	XXX,XXX

*The total Area G troll TAC is calculated as the difference between the WCVI AABM chinook TAC less offshore recreational catch, NTC First Nations Expected FSC catch, Maa-nulth Domestic Allocation and T'aaq-wiihak Allocation.

**First Nations catch is preliminary.

***Preliminary catch based on independent dockside monitoring program still requires reconciliation with T'aaq-wiihak data.

Recreational Fisheries

The WCVI AABM recreational chinook fishery primarily takes place in offshore Areas 121-127 from June to September. Chinook catch from inshore Areas 21-27 in June and Areas 21-24 in July are also included in the AABM estimate. Catch and effort are largely driven by abundance and weather, and together both have impacts on annual harvest. Previous sampling has indicated that there is minimal AABM catch and effort outside of this period.

Chinook management measures are in place in the near-shore AABM areas to protect migrating WCVI origin chinook. In 2016 there were significant changes to these management measures for WCVI chinook in Areas 21-27. These changes included removing portions of the WCVI chinook corridor, increasing the finfish closures in several areas, increasing terminal chinook non-retention areas, and focusing recreational opportunities in areas where DNA samples indicate that WCVI chinook presence is lower.

Chinook catch in the AABM sport fishery is estimated through several catch monitoring programs, including a creel survey, a logbook program and DFO's electronic survey information (iREC). The creel survey continues to be the most utilized catch monitoring program in this area particularly because it collects effort (number of boat trips), and catch per unit effort data. Catch for any given species within a defined time-area stratum is estimated by multiplying effort estimates by CPUE. Total effort is estimated through vessel counts, gathered through either aerial or on-water boat surveys of the fishing area. CPUE is estimated from interviews with anglers at specific landing sites and from trip logbooks and manifests submitted by lodges and guides through a voluntary monitoring program. Logbook effort is removed from effort estimates where there is overlap. Data regarding the daily activity profile of the fishery, fishing locations, and the proportion of guided versus un-guided effort are also gathered from angler interviews.

The total chinook catch in the 2016 WCVI AABM fishery was estimated to be 37,809, which is down 40% from the 5 year average of 62,900. The total chinook released in the 2016 WCVI AABM fishery was estimated to be 22,512, which is down 60% from the 5 year average of 52,000. Effort in the AABM area

for 2016 was 28,197 boat trips, which is down about 10% from 2015. Please see Figure 41 below which illustrates catch and effort from 1995 through 2016.

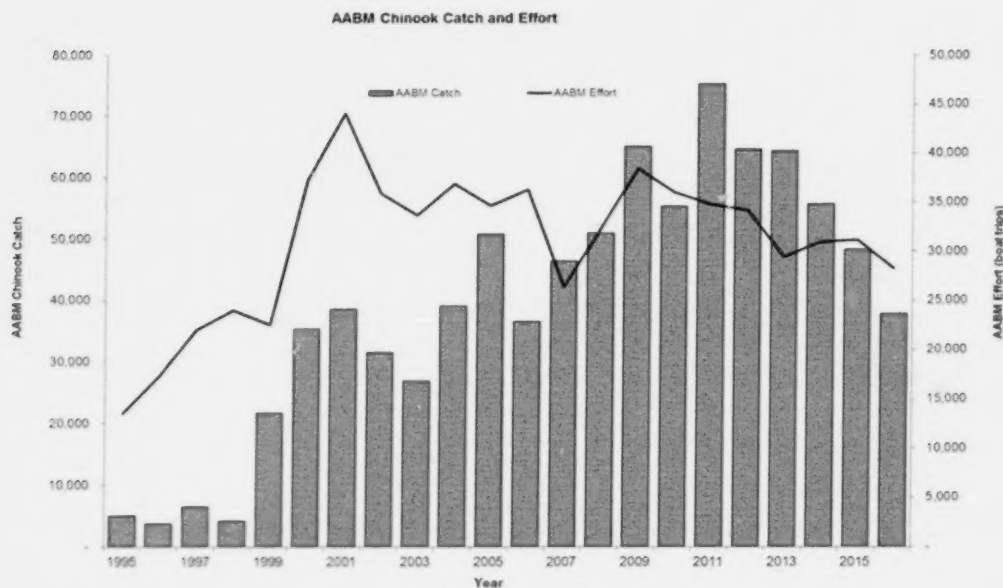


Figure 41. - Preliminary Recreational WCVI Chinook AABM Catch and Effort, 1995-2016

Commercial Fisheries

Commercial (A-H Fisheries includes ATP)

After the completion of the April 2016 Chinook Technical Committee (CTC) chinook model calibration, the WCVI AABM Canadian allowable harvest was 133,300. The FSC harvest was set at 9,248; and the expected recreational catch was 60,000, leaving 64,052 chinook available for commercial harvest. The commercial TAC was apportioned with 88.2% to Area G Troll and 11.8% to the T'aaq-wiihak First Nations Demonstration fishery. The Area G Troll TAC was 56,517 chinook. In early August, the expected recreational catch was reduced by 10,000 to 50,000 based on preliminary creel survey results through July. In early September, the expected recreational catch was further reduced to 41,000 chinook based on preliminary catch results through the end of August. This increased the total commercial TAC to 83,052, the Area G TAC to 73,281 and the T'aaq-wiihak TAC to 9,771 chinook. The total estimated commercial catch was 55,168 of which the Area G troll catch was 49,119 and the T'aaq-wiihak catch was 6,049. (Please note that the preliminary T'aaq-wiihak catch is from the independent dockside monitoring program and still requires reconciliation with the T'aaq-wiihak supplied data.)

For the 2015/2016 chinook year (October 1, 2015 to September 30, 2016), fisheries continued to be shaped by conservation concerns for the following domestic stocks: Fraser River Spring 42, Spring 52, Summer 52 chinook, Interior Fraser River coho, WCVI origin chinook salmon, and LGS chinook.

Area G Troll Summary

The Area G Troll annual management plan is designed to maintain exploitation rates on stocks of concern within established limits, by the use of fishing time and area closures in conjunction with fishing effort limits. The management plan distributes catch and effort throughout the fishing year.

The management plan is subject to change as required to address specific conservation concerns as they arise. For the 2016 fishing season the following changes to annual fishing plan were implemented:

- Conservation measures introduced in the Area G troll fishery in 2011-12, to address low returns of Fraser River Spring 42, Spring 52, and Summer 52 chinook were implemented again in the 2015-16 season. For Area G troll this includes a fishery closure for the month of June and the July fisheries were delayed until the third week of July.
- To avoid exceeding the overall WCVI AABM TAC, 5,000 chinook of the Area G TAC was allocated to September fisheries. If preliminary AABM catch estimates indicate the overall WCVI AABM TAC may be exceeded, the Area G TAC set aside for September would be used to assist Canada with staying within its overall WCVI chinook TAC.
- Retention of marked coho salmon by-catch was permitted in all openings between September 15 and December 31.

Area G Troll Fishing Periods:

October to March period:

During the period from October 1 to March 15, a harvest level of approximately 20% of the Area G annual TAC was recommended, based on the PST chinook model calibration and assigned harvest levels for the outer WCVI area.

March 16 to April 18 period:

A full time-area closure was maintained from March 16 to April 18 annually to avoid interception of Fraser River Spring 42 and Fraser Spring & Summer 52 chinook.

Late April/ mid-June period:

During the period from April 19 to June 15, a harvest of approximately 40% of the Area G annual TAC was recommended, based on the PST chinook model calibration and assigned harvest levels for the outer WCVI area. In addition, total effort (boat-days) was limited and areas of southwest Vancouver Island were closed until May 7 (partial openings from May 2 to 7), in order to avoid interception of Fraser River Spring 42, Spring 52, and Summer 52 chinook.

June 16 to July 23 period:

A full time-area closure was maintained from June 15 to July 23 in Management Areas 125 to 127, and from June 16 to July 31 in Management Areas 123 to 124, to avoid interception of Fraser River Spring 42, Spring 52, and Summer 52 chinook.

July 24 through early August:

Area G did not fish until August 6 and then the fishery stayed open until Sept 30. During this period, a harvest of approximately 20% of the Area G annual TAC was recommended, based on the PST chinook

model calibration and assigned harvest levels for the outer WCVI area. In addition, the fishery was managed to minimize mortality on wild coho through: a) a maximum interception of coho; and b) the mandatory use of large (minimum 6") plugs. As well, the fishery was managed to minimize mortality of WCVI origin chinook through the use of time- area closures of near shore areas where WCVI chinook stocks are prevalent.

September period:

During the September period, a harvest of approximately 20% of the Area G annual TAC was recommended based on the PST chinook model calibration and assigned harvest levels for the outer WCVI area. The Area G harvest level in September has the potential to increase if there is available remaining WCVI AABM TAC after accounting for First Nation FSC and recreational fisheries. However, if First Nations or the recreational sectors catches are larger than projected, the available commercial TAC is reduced. During harvest opportunities between September 15 and December 31 retention of marked coho by-catch was permitted.

For all troll fisheries, selective fishing practices were mandatory, including single barbless hooks and revival tanks for resuscitating non-retention species prior to release.

Since 1999, a major objective for the management of the WCVI troll fishery has been to distribute the catch throughout the fall-winter-spring-summer periods. This objective was continued in 2015/2016.

The late July and August plug fisheries were monitored to determine encounter rates of other species and estimate numbers of released chinook. Biological sampling was conducted for size distributions, and stock compositions (Coded Wire Tags, DNA and otolith samples).

Table 30. - Post-Season Preliminary Monthly Catch Estimates for 2010/11 to 2015/16 WCVI AABM Chinook Area G Troll Fisheries

	2015/2016	2014/2015	2013/2014	2012/2013	2011/2012	2010/2011
October	178	213	2,358	3,344	0	0
November	13	56	28	230	57	0
December	1	0	25	312	188	0
January	51	186	49	1,018	129	0
February	342	612	586	358	542	1,849
March	315	731	1,422	501	243	875
April	6,456	3,841	13,345	1,374	10,493	8,670
May	31,799	27,405	40,336	25,737	22,334	41,239
June	0	0	0	0	0	34,394
July	0	0	26,494*	0	0	15,619*
August	7,574*	13,953*	10,002*	0	4,280*	21,284*
September	2,390**	7,341	15,360	2,519	17,264	0
Total	49,119	54,338	110,005	35,393	55,530	123,930

*Plug fishery.

**Plug fishery until September 15.

First Nation Commercial Harvest

In 2016 the Department authorized an AABM chinook salmon demonstration fishery for the T'aaq-wiihak Nations with an initial TAC of 7,536 pieces. The fishery was carried out in portions of Areas 24, 25, 26, 124, 125 and 126 on the west coast of Vancouver Island discontinuously between May 27 and September 30, 2016. In early August, the expected recreational catch was reduced by 10,000 to 50,000 based on

preliminary creel survey results through July. In early September, the expected recreational catch was further reduced to 41,000 chinook based on preliminary catch results through the end of August. This increased the T'aaq-wiihak TAC to 9,771 based on their share of the commercial AABM TAC (11.8%). Total sold catch estimated for the fishery was 6,049 chinook. Retention of marked coho was permitted after September 15 and 414 coho were landed for sale. Several groundfish species were also permitted to be retained for sale. Please note that the preliminary catch numbers are from an independent dockside monitoring program. These numbers still need to be reconciled with the data provided by the T'aaq-wiihak. Reported releases for this fishery were 1,663 sub-legal chinook, 25 legal chinook, 417 coho, 3 chum and 1 pink.

First Nations

Total AABM chinook reported for First Nations FSC and domestic fisheries (to date) is 2,346.

SOUTHERN B.C. CHINOOK INDIVIDUAL STOCK BASED MANAGEMENT (ISBM)

Objectives and Overview

In addition to the PST regime, Canada implemented management actions as required to ensure conservation of Canadian origin chinook and to meet domestic allocation requirements. These chinook fisheries were managed to harvest rates on an individual stock basis (ISBM).

Measures were taken in 2016 in First Nations FSC, recreational and commercial chinook fisheries to protect WCVI, LGS, Fraser River Spring 42, Spring 52, and Summer 52 chinook stocks. FSC management actions included time and area closures and reduced fishing times. Recreational measures included barbless hooks, time/area closures, size restrictions and mark selective fisheries. Commercial measures included barbless hooks, time and area closures, gear restrictions, mandatory use of revival tanks, daily catch reporting and mandatory logbooks. Post-release mortality information for chinook included in ISBM management was determined from studies conducted in 2000-2001.

Specific management actions were taken to protect WCVI origin chinook in Canadian ocean fisheries (not including enhanced terminal areas), the harvest of which was restricted to an exploitation rate of 10%. Fisheries that this limit applies to are the northern troll, Haida Gwaii recreational, WCVI troll and WCVI recreational. Most Southern B.C. fisheries were regulated so that impacts on WCVI wild chinook stocks was minimized, with the exception of terminal recreational, commercial and First Nations FSC fisheries.

LGS chinook stocks are improving from historic lows seen in 2009 and are rebuilding slowly. Significant management measures in recreational and commercial fisheries continued to be in place throughout 2016 to protect these stocks. Some LGS chinook stocks are seeing a gradual increase in terminal returns, particularly in the Cowichan River, which is encouraging; however, their productivity and Salmon Outlook category remains low.

Fraser River Spring 42, Spring 52, and Summer 52 chinook stocks had specific management measures in place to reduce exploitation in FSC, recreational and commercial fisheries. FSC management actions in the Fraser River included time and area closures, and reduced fishing times. Recreational fisheries in Juan de Fuca Strait, the lower Strait of Georgia and the approach waters of the Fraser River had specific time, area, size and mark selective restrictions designed to minimize the amount of exploitation on these chinook stocks. Fraser River tidal and non-tidal sport fisheries had delayed starting dates, implemented to protect Fraser River Spring 42, Spring 52, and Summer 52 chinook stocks. In addition, due to extreme environmental conditions in 2015, the chinook directed sport fisheries in the approach waters to and in the Fraser River were even further delayed to late July and early August. The Area G and T'aaq-wiihak commercial troll fisheries on the WCVI were also managed with time and area closures in 2016 for Fraser River Spring 42, Spring 52, and Summer 52 chinook stocks.

ISBM chinook catch and release information from all fisheries can be found in Table 47.

Stock Status

West Coast Vancouver Island Chinook

Wild WCVI chinook are a stock of concern. While stocks are low and stable, they are below target and have not rebuilt from low abundances that resulted from a decline in productivity observed during the early to mid-1990s. Of particular concern are those stocks that originate from the SWVI area conservation unit (i.e. Clayoquot Sound).

Hatchery production supports terminal fisheries directed at surplus production with management measures in place to reduce impacts on wild origin stocks. For WCVI hatchery stocks, the terminal return is defined as total catch (First Nation FSC, recreational and commercial) in the near approach areas of the hatchery plus escapement (brood collection plus natural spawners). In these hatchery approach areas, catch is dominated by the hatchery stock (e.g. >95%), therefore, higher exploitation rates are permitted than in times and areas dominated by naturally produced WCVI chinook stocks.

Strait of Georgia Chinook

Fall

Total returns to Strait of Georgia streams north of Nanaimo, virtually all of which are enhanced, have been relatively stable for the last fifteen years. In general, 2016 chinook escapements were similar to or higher than 2015 in this area. The abundance of Englishman River chinook was much lower than 2015 however the chinook returning to Little Qualicum was higher than the abundance in 2015.

In the southern Strait of Georgia, total returns have been on a decreasing trend over the last 25 years. Specifically, the Nanaimo River chinook abundance has been generally stable since 1995 and the Cowichan River chinook abundance has decreased since the very high escapements in the 1990s to the low in 2009. Since that year the spawner abundances have slightly increased to approximately half of the long term average. In 2016, the Nanaimo and Cowichan River chinook abundance increased over the previous year. Goldstream River chinook continue to have very low numbers of spawners.

Despite strong returns in 2016 relative to expectations, this population continues to be a stock of concern. There are continuing improvements to the returns to Cowichan River, to the point of getting near the escapement target, however it continues to be a stock of concern until such time that the run can be considered to be no longer at risk. Three generations would be the time frame (9 years).

In 2016, chinook escapement to Cowichan River was much higher than the previous year. The preliminary analysis from the enumeration project is an estimate of 9,000 spawners (all ages) and 427 broodstock taken for the Cowichan River Hatchery. Approximately 62% of the spawners are age 3+ ('adults') and the other 38% are age 2 ('jacks' and 'jills'). This high component of age 2 chinook is suggestive of additional increases in the 2017 and 2018 returns. Water levels were low from April until mid-October although upstream migration occurred during this period. The number of chinook caught in local First Nation FSC fisheries has not yet been reported.

On the mainland side of the northern Strait of Georgia, Sliammon and Lang hatcheries continue to have variable returns, however in the last five years the returns to Lang Creek have been stronger than in previous years. There are a few very small, wild populations remaining in the Theodosia and Skwakwa rivers, and those rivers entering Jervis Inlet, where assessment data are poor or not available. Historically, a large proportion of the chinook stock aggregate originating from rivers north of Nanaimo migrate into central

and northern B.C. and Alaska. Exploitation rates on this stock aggregate have gradually been reduced over the last 15 years, thus the stable trend in annual returns to rivers over this period suggests a reduction in marine survival.

Spring/Summer

The Puntledge, Nanaimo and more recently the Cowichan system have identified early runs of Chinook in the Strait of Georgia. Cowichan Summer run chinook were monitored this year and preliminary results show an abundance of 200 individuals. These were shown to move upstream into the Cowichan Lake through the summer, dropping downstream in August and September to spawn. Efforts to recover Puntledge summers to viable levels have resulted in improved returns to the river since 1999. The 2006 and 2007 natural spawning escapements ranged from 200 - 500 adults (not including brood capture), which is down from the record high in 2005 of approximately 2,500 adults, but is substantially higher than escapements recorded in the previous decades. The preliminary estimate for 2016 escapement to Puntledge is approximately 843 adults which is a continuation of the increasing abundance trend over the past four years.

Monitoring of Nanaimo spring and summer chinook escapement did not occur this year.

Johnstone Strait Mainland Inlet Chinook

Currently only three systems are monitored consistently in Areas 12 and 13. The Nimpkish River is assessed using standardized swim surveys and stream walks by hatchery staff. An intensive mark-recapture program is carried out by Quinsam Hatchery to estimate escapement on the Campbell/Quinsam system. A mark-recapture program has been in development over the past few years on the Phillips River, with the plan to eventually establish it as a mainland chinook indicator. Other systems are covered using intermittent visual surveys.

Nimpkish River

In 2016, the coverage of the chinook timing was greatly impacted by flow conditions during late October to early November, which made coverage of the watershed difficult. Assessment coverage up until that time period will be used to determine escapement to the system for 2016. Hatchery staff were successful in collecting approximately 75% of their broodstock target prior to the significant rain events. The preliminary escapement estimate of just over 1,400 individuals is similar to the last few years and is a continued improvement over the low but stable returns seen prior to 2012, which averaged around 600 adults.

Campbell/Quinsam System

The Campbell/Quinsam, a long-term chinook indicator, has been assessed by carcass mark-recapture since 1984. Preliminary results for the 2016 program have the combined system chinook estimate at approximately 8,400 adults; which is possibly a conservative estimate, due to challenges presented by the frequent adverse river conditions this fall. This improved estimate exceeds those of past years, and is the largest return since 2006. However, estimate precision declined on both systems compared to 2015.

With very limited opportunities for seining, hatchery staff attained their brood target from the abundance of swim-ins.

Phillips River

Preliminary results from the mark-recapture program on the Phillips River indicate the chinook escapement is in the range of 2,200 adults, consistent with the 2,000-2,500 trend of the past few years. Estimate precision for this program has continued to improve, falling below 10% this year.

Broodstock was again collected in 2016, the local hatchery plans to release approximately 90,000 coded wire tagged chinook smolts next spring to contribute to the assessment program.

First Nations Fisheries

WCVI FSC Fisheries

The Hupacasath and Tseshaht First Nations caught a total of 1,991 chinook by gillnet, rod and reel and as by catch during other salmon fisheries in Area 23. Catch reports for Maa-nulth domestic harvest indicate a combined ISBM FSC chinook harvest of 378 pieces. NTC First Nations ISBM catch reported to date is 1,157 pieces.

The total WCVI FSC chinook catch to date is 3,526 pieces.

Strait of Georgia FSC Fisheries

Data are still being compiled on various First Nations catches in the Strait of Georgia; however, preliminary catch is estimated at 650 chinook.

Johnstone Strait FSC Fisheries

Data are still being compiled on various First Nations catches in Johnstone Strait; however, preliminary catch is estimated at 347 chinook.

Fraser River FSC Fisheries

FSC fisheries took place in the Lower Fraser River between the mouth and Sawmill Creek from May through November 2016. A total of 5,812 chinook were harvested, with 3,413 taken in chinook-directed fisheries, and the remaining chinook harvested as bycatch in sockeye and chum-directed FSC openings. Additionally, the following bycatch occurred during chinook- targeted FSC openings: 189 sockeye kept and 54 sockeye released; 163 coho kept and 518 coho released; 14 chum kept.

Chinook directed FSC fisheries took place in the Fraser River above Sawmill Creek from May through September 2016. A total of 3,985 chinook were harvested. Bycatch estimates are currently being finalized. Preliminary data indicate that less than 500 sockeye were released and less than 300 coho were released in chinook directed FSC fisheries above Sawmill Creek.

Commercial

In 2016 there were commercial fisheries in Barkley Sound and Nootka Sound which targeted ISBM chinook.

Area B Seine

No seine fisheries occurred for WCVI ISBM chinook in 2016.

Area D Gill Net

In 2016, due to the expected abundant return of 4 year old Robertson Creek chinook commercial gillnet fisheries were opened in late August and through September. The fisheries occurred in Subarea 23-1, upper Alberni Inlet, targeting chinook returns to Robertson Creek Hatchery. The fisheries occurred on August 22, September 5 and, 10. The fisheries were not successful, with a total catch of 774 pieces. The remaining

commercial chinook catch for Area 23 was taken in the same area during coho directed openings with chinook bycatch of 781 pcs. The total ISBM chinook catch in Area 23 for Area D was 1,555 pcs.

In 2016, gill net fisheries occurred in Tlupana Inlet targeting chinook returns to the Conuma River hatchery. Fisheries occurred 2 nights per week from Aug 17 to September 7. The total estimated catch during the chinook directed fishery was 3,451 chinook and 35 chum retained with 1 coho and 4 chum reported being released.

Area E Gill Net

No Area E gill net fisheries occurred for ISBM chinook in 2016.

Fraser River Economic Opportunity and Inland Demonstration Fisheries

Lower Fraser Area

In 2016, no sockeye-directed economic opportunity or demonstration fisheries took place in the Fraser Area; therefore there was no incidental impact on chinook from these fisheries.

In mid-October through early November limited economic opportunity/ demonstration fisheries to access available chum salmon TAC were initiated. Although the retention of chinook salmon was not authorized during these economic opportunity demonstration / fisheries, there was some by-catch retention reported. In chum economic opportunity/demonstration fisheries the total chinook harvested was 4 kept and 283 released.

Mid Fraser / Thompson area

Economic opportunity or inland demonstration fisheries did not occur in 2016 for ISBM chinook in either the upper or lower reaches of the Fraser River.

An inland commercial fishing enterprise (CFE) operated by Riverfresh (Secwepemc Fisheries Commission), received an allocation for chinook in the B.C. Interior but did not conduct a fishery due to sockeye constraints. Dual fishing is in place for this fishery but low returns of sockeye in the area resulted in the CFE deciding to not conduct the fishery.

First Nations Commercial Harvest

In 2016 an agreement was reached with the Hupacasath and Tseshah First Nations for an Economic Opportunity fishery. There was an opportunity for several commercial chinook openings August 21st, September 7th and 12th. The total catch of chinook in these openings was 10,248 pcs with a bycatch of 2,764 pcs of coho. These fisheries were very successful for chinook and the total catch was 10,248 pieces.

The Department authorized an ISBM chinook salmon demonstration fishery in Area 25 for the T'aaq-wiihak Nations in 2016. This fishery targeted both the Conuma River and Burman River enhanced chinook returns using troll and gillnet gear. Fishery openings occurred discontinuously from July 1 to September 1. A total of 56 chinook from the Conuma targeted fishery and 261 chinook from the Burman targeted fishery were sold with no bycatch reported.

Excess Salmon Spawning to Requirements (ESSR) Fisheries

WCVI ESSR Fisheries

The Tseshah and Hupacasath First Nations were issued a joint Excess Salmon to Spawning Requirements (ESSR) Licence for chinook at the Robertson Creek Hatchery facility. The total sold was 29,698 chinook

(this total includes 4,778 jacks). The Ditidaht First Nation was issued an ESSR Licence for chinook at Nitinat Lake and the Nitinat Hatchery. The total harvested was 2,557 chinook. The Mowachaht/Muchalaht First Nation was issued an ESSR licence to harvest chinook from the Conuma River and hatchery. The catch from this ESSR fishery was 5,067 chinook (including 132 jacks). The total catch for all WCVI ESSR chinook fisheries was 37,322 pieces.

Strait of Georgia ESSR Fisheries

ESSR harvest at the Big Qualicum hatchery included catch of 3,028 chinook (total includes 1,325 jacks).

Capilano Hatchery ESSR Fisheries

There were ESSR fisheries at the Capilano hatchery in 2016 that included chinook salmon. The total harvest of chinook salmon was 841 pieces (total includes 430 jacks).

Fraser River ESSR Fisheries

There were ESSR fisheries at the Chilliwack hatchery in 2016 that included chinook salmon. The total harvest of chinook salmon was 5,871 pieces (total includes 2,638 jacks).

There were ESSR fisheries at the Inch Creek and Chehalis hatcheries in 2016 however no harvests of chinook salmon took place.

Johnstone Strait ESSR Fisheries

Currently there are no ESSR opportunities on chinook in Johnstone Strait.

Recreational

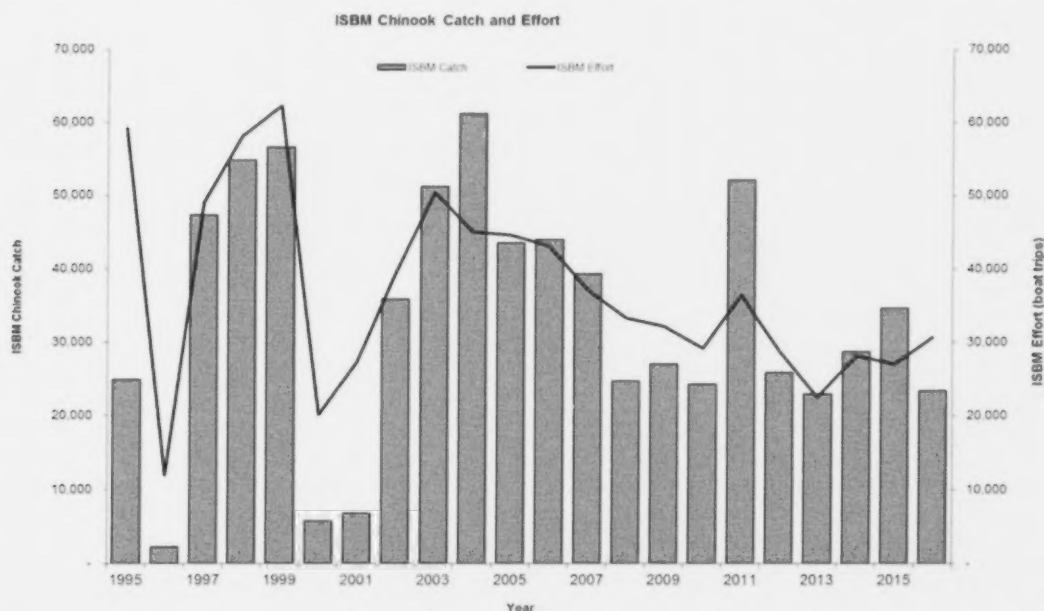
West Coast Vancouver Island

WCVI recreational ISBM fisheries are managed to fall within Canada's 10% exploitation rate on WCVI wild chinook. To help achieve this objective management measures are put in place along the coast in areas that tagging studies have shown to be the main WCVI chinook migratory routes. Prior to 2016 this area was managed using a chinook Conservation Corridor, which was an area one nautical mile seaward of the surf line, extending from Areas 123 to 127. In 2016 management measures were put into place that increased finfish closed areas, increased terminal chinook non-retention areas, and provided increased recreational access to areas where hatchery stock composition was considered to be the highest.

Chinook management measures depend on forecasted abundance and should change annually based on the WCVI chinook abundance forecasts.

These management measures went into effect starting July 15 in those waters north of Estevan Point and August 1 for those waters south of Estevan Point. In 2016, a high return of 4 year old chinook was expected to return to the WCVI. Actual returns were slightly below forecast, but still provided good recreational fishing opportunities in many areas. Other management measures in effect to reduce recreational impacts on chinook include barbless hooks, a minimum size limit, daily limits and annual limits.

Figure 42. - Sport WCVI Chinook ISBM Catch and Effort, 1995-2016



*Note this doesn't include Areas 22, and the WCVI portion of Area 20.

Inside Areas: Strait of Georgia, Johnstone Strait, and Juan de Fuca Strait

2016 sport fisheries in these areas were designed to minimize impact on returning Fraser River Spring 42, Spring 52, and Summer 52 chinook. Management measures put in place to protect these stocks included mark selective fisheries and size limits in specific areas/times.

In those waters near Victoria between Cadboro Point and Sheringham Point (Subareas 19-1 to 19-4 and Subarea 20-5), retention regulations were adjusted from March 1 to June 17 where anglers were permitted to retain two chinook per day either wild or hatchery marked between 45 cm and 67 cm or hatchery marked only chinook over 67 cm in length. In this same waters, with the addition of Subarea 20-4, retention regulations were adjusted from June 18 to July 17 where anglers were permitted to retain two chinook per day either wild or hatchery marked between 45 cm and 85 cm or hatchery marked only chinook over 85 cm in length. The minimum size limit in these waters is 45 cm in length. This is the Zone 1 management measure for Fraser chinook.

The Strait of Georgia "chinook corridor" extending from Subareas 18-1 to 18-6, 18-9, 18-11, 19- 5 and a portion of 29-4 and 20-5 that lies south from a point on the east side of Valdes Island and extending 57 degrees true for 5 nautical miles remained in place in 2016. In this corridor the daily limit was two chinook of which only one could be over 67 cm from May 9 to July 17. In 2016, retention regulations in these waters were adjusted from June 18 1 to July 15 where anglers were permitted to retain two chinook per day either wild or hatchery marked between 62 cm and 85 cm. The minimum size limit is 62 cm. This is the Zone 1 management measure for Fraser chinook

Drought like conditions in the summer of 2016 elevated the concern for Lower Georgia Strait chinook, including Cowichan River chinook due to reduced river flows and high river temperatures. Chinook non-retention measures were put into effect from July 25 - October 14 in Subareas, 18-6 to 18-8 during this period of concern. Improved flow and temperature conditions were observed in September and October, as

well as strong chinook returns to the Cowichan River. The terminal finfish closure in Cowichan Bay was lifted and replaced with a chinook non-retention regulation to allow recreational opportunities in this area.

For the Johnstone Strait and Strait of Georgia areas chinook management measures also included an annual limit of 15 chinook, a daily limit of two chinook and a minimum size limit of 62 cm.

For the Canadian portion of Juan de Fuca Strait south of Cadboro Point, regulations included an annual limit of 20 chinook, a daily limit of two chinook and a minimum size limit of 45 cm.

In 2016 marine sport fisheries were monitored by creel surveys in three main areas: 1) Juan de Fuca including Victoria (south of Cadboro Point) and Juan de Fuca Strait through Subareas 20-1; 2) Portions of the Strait of Georgia including Areas 14 through 18, that portion of Area 19 north of Cadboro Point, Areas 28 and 29; and 3) Johnstone Strait including Areas 11 to 13. Monitoring of the Strait of Georgia sport fishery took place from June-October (not all areas were surveyed every month), and Juan de Fuca Strait sport fishery (March to October) has been fairly consistent from year to year using an access point (landing site) survey for collecting catch, CPUE, and biological information combined with an aerial survey for effort counts. In addition, logbook programs, directed at estimating the sport catch by fishing guides during guided trips, were conducted in the Campbell River and Victoria Areas in 2016. The Johnstone Strait creel survey commenced in Area 13 in May and continued through until the end of September, and from June through August to included Areas 11 and 12.

Effort, catch and release information from marine fisheries are summarized in Table 31.

Table 31. - Preliminary Catch and Effort Estimates for Southern B.C. Inside Sport ISBM Fisheries in 2016.

Fishing Area	Survey Period	Chinook Kept	Chinook Released
Strait of Georgia	Jun - Oct	27,443	55,474
Johnstone Strait	Jun - Aug	8,349	7,146
Juan de Fuca Strait	Mar- Oct	22,866	23,886
WCVI Inshore	Jun-Sep	33,574	37,098
Fraser River**	Jul - Oct	1968	126
TOTAL			

** Complete Lower Fraser recreational fisheries estimates not yet available at the time of this report.

Region 1 Vancouver Island Tributaries

Fresh water restrictions were in effect in most tributaries on Vancouver Island due to drought like conditions in 2016. Rivers on the southern half of Vancouver Island (Regions 1-1 to 1-6) were closed to angling from July 1 to September 16. Portions of Region 1 (Regions 7-13) remained open. The Qualicum Nitinat, Somass and Conuma Rivers provided some recreational opportunities to harvest enhanced chinook stocks during this time period.

Qualicum River

Qualicum River opened for chinook on August 1 for four per day less than 62 cm. On October 16, the regulation changed to four chinook per day of which 2 could be greater than 62 cm. The Qualicum River was not monitored by creel survey during 2016.

Somass/ Stamp

During 2016 there was a non-tidal opening on the Somass/Stamp River (Area 23) with chinook retention. The fishery opened from August 25th until December 31, 2016, and the daily limit was one chinook

salmon greater than 77cm and one less than 77 cm. The Somass/Stamp Rivers were not monitored by creel survey during 2016.

Nitinat

During 2016 there was a planned non-tidal opening for the Nitinat River (Area 22) from September 2, 2016 to September 30, 2016. The daily limit was two with only one greater than 77 cm. The salmon fishery was closed for retention of chinook from October 1 until October 14 to protect chinook salmon during the peak spawning period. The salmon fishery re-opened from October 16 until December 31 with non-retention of chinook salmon. The Nitinat River was not monitored by creel survey during 2016. The area above Parker Creek was closed to fishing.

Conuma

Angling for chinook opened on August 25th -Dec 31, 2016. The daily limit was two with only one greater than 77 cm.

Fraser River and Tributaries

Fraser River Spring 42, Spring 52, and Summer 52 chinook stocks required additional management measures again in 2016 due to continued concerns about stock status.

In Subareas 29-6, 29-7, 29-9 and 29-10, the 2016 fishing regulations were as follows:

- May 1 to July 31, no fishing for chinook salmon.
- August 1st to August 11, daily limit was two chinook (wild or hatchery marked) with a minimum length of 62 cm.
- August 12th to September 18th, no fishing for salmon. This management measure was in place to protect co-migrating sockeye salmon.
- September 19th to December 31, the daily limit was two chinook (wild or hatchery marked) with a minimum length of 62 cm.

Tidal Fraser and Region 2 Fraser River:

In the tidal waters of the Fraser River and in that portion of the Fraser River in Region 2 the following regulations were in place for 2016:

- January 1 to July 31, no fishing for salmon.
- August 1 to August 11, the daily limit was four chinook per day with only one over 50 cm allowed to be retained.
- August 12 to September 18, no fishing for salmon. This management measure was due to potential impacts to co-migrating sockeye salmon.
- September 19th to December 31 the daily limit for wild or hatchery marked chinook salmon was four with only one over 62 cm allowed to be retained.

Fraser River Tributaries:

There were several tributaries to the Fraser River in which chinook retention was permitted. These included:

- Alouette River: daily limit of one chinook from September 1 to December 31;
- Chehalis River: daily limit of four with only one over 50 cm from June 1 until August 31 and a daily limit of four chinook with only one over 62 cm from September 1 until December 31;
- Chilliwack/Vedder River: daily limit of four with only one over 62 cm from July 1 until August 31, daily limit of four with two over 62 cm from September 1 to December 31;
- Coquitlam River: daily limit of one chinook from September 1 to December 31;
- Harrison River: there was no chinook fishery on the Harrison River in 2016 due to a low forecast of terminal abundance.

Tributaries to the Fraser River above Sawmill Creek in which chinook retention was authorized included:

Region 3 - Fraser River Tributaries

- Kamloops Lake August 22 to September 15, daily limit of four chinook, only one over 50 cm.
- South Thompson River: August 16 to September 22, daily limit of four chinook, only two greater than 50 cm. There is a monthly quota of six chinook from the South Thompson River.

Region 5A

There were no recreational chinook fisheries in 2016.

Region 7

There were no recreational chinook fisheries in 2016.

Region 8

Note: there is a monthly limit of four chinook in Region 8.

- Mabel Lake and Lower Shuswap River: August 16 to September 12, daily limit of four chinook per day, only two greater than 50 cm. The open area in Mabel Lake was smaller than usual this year due to an area that remained closed off the mouth of Middle Shuswap River due to concern for co-migrating Middle Shuswap chinook.
- Middle Shuswap River: did not open in 2016 due to low brood year concerns.

FRASER RIVER SOCKEYE

Objectives and Overview

The 2016 Fraser sockeye forecast had an 80% prediction interval of 0.8M – 8.2M. From this distribution, the Fraser River Panel (FRP) adopted a run size forecast of 2.3M Fraser sockeye for planning purposes based on the 50% (p50) probability level forecast for all run timing aggregates. The majority of the total return (~74%) was expected to be from the Summer run sockeye run timing group. As the Canadian TAC at the p50 run size forecast was less than one million sockeye, pre-season planning focused on First Nations Food, Social and Ceremonial (FSC) fisheries and staying within constraints to minimize impacts on less abundant stock groups and species of concern.

Pre-season plans incorporated provisions to meet escapement objectives and meet conservation objectives for stocks of concern while considering international and domestic objectives.

Significant effort was placed on developing a pre-season plan for anticipated fisheries. The pre-season plan included the following assumptions and guiding principles in no particular order:

- The Fraser River Panel operated in accordance with Chapter 4, Annex IV of the Pacific Salmon Treaty, which came into effect prior to this season;
- The U.S. share of the annual Fraser River sockeye salmon total allowable catch (TAC), harvested in the waters of Washington State was set at 16.5% of the aggregate. To the extent practicable, the Fraser River Panel shall manage the United States fishery to implement a fishing plan that concentrates harvest on the most abundant management group or groups.
- It is understood that the U.S. harvest may exceed 16.5% of the TAC for one or more of the less abundant management groups by a small but acceptable amount despite concentrating the harvest in this manner;
- For computing TAC by stock management groupings, the Aboriginal Fishery Exemption (AFE) of 400,000 Fraser River sockeye, shall be allocated to management groups as follows: The Early Stuart sockeye exemption shall be up to 20% (80,000) of the Fraser River AFE, and the remaining balance of the latter exemption shall be based on the average proportional distribution of First Nations Food, Social and Ceremonial catch for the most recent three cycles and modified annually as required to address concerns for Fraser River sockeye stocks and other species, and as otherwise agreed to by the Fraser River Panel;
- It was anticipated that an in-season run size estimate for Cultus Lake sockeye would not be possible due to low abundance relative to co-migrating sockeye stocks. As a result, the Cultus exploitation rate is assumed to be the same as the exploitation rate from the similarly timed Late run stocks (excluding the Birkenhead and Birkenhead-type miscellaneous stocks), caught seaward of the confluence of the Fraser and the Vedder Rivers;
- The four run timing aggregates identified under the Pacific Salmon Treaty Annex generally contain stocks with similar timing in the marine area. Recent trends in timing of some stocks, including Raft River and North Thompson (in the Early Summer run prior to 2012), and Harrison River (in the Late run prior to 2012) sockeye now differs substantially from the other stocks in their respective historical run timing groups. Fisheries and Oceans Canada continues to manage these stocks as part of the Summer run aggregate to better align these stocks with other stocks of similar run timing. Escapement plans, management adjustments and harvest rules have been adjusted to account for this change;

- Canada's escapement plan specified escapement requirements that varied with run size for each of the run timing aggregates;
- The Total Allowable Mortality (TAM) cap describes the upper range of the total mortality (including management adjustments and exploitation rate). The TAM cap was 60% for all run timing/management groups.
- At low abundances, low abundance exploitation rates (LAERs) are implemented to protect 90% of the run timing aggregate (10% LAER) while allowing for fisheries on more abundant co-migrating run timing groups and/or other species. The exception is the Late run aggregate where a 20% LAER has been implemented consistent with recent years' practice.
- In 2016, Early Stuart sockeye window closures and other fishing restrictions were planned for commercial, recreational and First Nations fisheries to protect a significant proportion (90%) of the Early Stuart return. These measures included a rolling window closure based on run timing of the Early Stuart sockeye migration through various fishery areas.
- Conservation concerns for other sockeye stocks and species continued to impact the planning of sockeye fisheries. The stocks and species of concern in 2016 were: Cultus Lake sockeye, Nimpkish River sockeye, Sakinaw Lake sockeye, Interior Fraser River coho, Fraser Spring 42 chinook, Fraser Spring and Summer 52 chinook, and Interior Fraser River steelhead.

Stock Status

Pre-season Assessment

Pre-season expectations were for a median run size (p50 level) of 2,271,000 Fraser River sockeye salmon and a one in two chance that the run size would be between 1,296,000 and 4,227,000. Table 32

Pre-season expectations of migration parameters included a 75% diversion rate for Fraser River sockeye through Johnstone Strait. Expected Area 20 50% migration dates were July 3 for Early Stuart, July 21 for Early Summer, August 6 for Summer, and August 14 for Late-run sockeye. Table 33 (top)

Pre-season spawning escapement goals were 36,000 Early Stuart, 178,800 Early Summer, 722,000 Summer and 111,000 Late-run sockeye for a total of 1,047,800 sockeye spawners. The goals for each sockeye management group were established by applying Canada's Spawning Escapement Plan to the forecasted run size. For pre-season planning purposes, Early Stuart and Late-run sockeye were respectively constrained by a 10% and a 20% Low Abundance Exploitation Rate (LAER). Table 34

Management Adjustments (MAs) of 105,500 Early Summer and 79,400 Summer-run sockeye were added to the spawning escapement targets to increase the likelihood of achieving the targets. The application of a LAER for Early Stuart and Late-run sockeye indicates that spawning escapement targets are unlikely to be reached and therefore obviates the need for management adjustments for these two groups. Table 33 (top)

The preseason MAs were derived from proportional difference between estimates (pDBE) for the Early Summer and Summer-run aggregates. These in turn were estimated as the weighted average of each component's median pDBE using historic data and their median preseason forecast abundances. For Early Summer-run, the three components consisted of Chilliwack, Pitt and the remaining Early Summer-run stocks while the Summer-run aggregate was divided into Harrison and non-Harrison components. The median pDBE for Chilliwack was calculated using dominant/subdominant years, while the median for all other component groups was based on all years. Table 33 (top)

The projected Total Allowable Catch (TAC) of Fraser River sockeye salmon based on the median forecasted abundances and agreed deductions was 647,700 sockeye, of which 16.5% (106,000 sockeye) were allocated to the United States (U.S.). Table 33 (top)

Pre-season model runs indicated it was unlikely the Summer-run TAC could be fully harvested due to fisheries constraints required to achieve spawning escapement targets for co-migrating Early Summer and Late-run stocks

In season Assessment

Marine migration timing was earlier than pre-season expectations for most management groups: 1 day for Early Summer and 6 days for both Summer and Late-run. Early Stuart timing was as forecast. No delay was detected in the migration behaviour for Late-run. Figure 43

The overall Johnstone Strait diversion rate was 50% compared to a pre-season forecast of 75%.

Returns for all management groups were substantially below median pre-season forecasts (Early Stuart run: 50% below median forecast, Early Summer run: 46% below median forecast, Summer-run: 69% below median forecast and Late-run: 37% below median forecast). In context to the pre-season forecast range, the Early Stuart return was between the p10 and p25 forecast, Early Summers slightly above the p25 forecast, Summers below the p10 forecast, and Lates slightly above the p25 forecast. Table 32

Fraser River discharge remained low for the duration of the season while river temperatures remained high. Despite the high temperatures, the in-season model estimates of differences between potential spawning escapement and the actual number of spawners on the spawning grounds (DBE) were similar to the pre-season median values used for Early Summers. While the in-season model estimates for Summers were higher than pre-season median values, no in-season updates to DBEs were adopted in-season in 2016. As the in-season run size for Early Stuart, Summers and Lates resulted in these groups being managed under a low abundance exploitation rate (LAER) scenario, DBEs were not required. Table 33 (bottom)

Post Season

Returns of adult Fraser sockeye totalled 853,000 fish, less than half the brood year abundance of 2,057,700 fish in 2012. This return was the smallest over the last 50 years. Divided into management groups, preliminary estimates of adult returns totalled 18,000 Early Stuart, 240,000 Early Summer-run, 527,000 Summer-run and 70,000 Late-run sockeye. Table 32

Catches of Fraser River sockeye salmon in all fisheries totaled 147,000 fish, including 137,000 fish caught by Canada, 2,000 fish caught by the U.S. and 9,000 fish caught by test fisheries.

Almost all the Canadian catch occurred in First Nations FSC fisheries (Food, Social and Ceremonial, 136,000 fish). In Washington, catches were in non-commercial and Treaty Indian commercial fisheries (1,000 fish each). Excluding a yet to be determined catch of Fraser Sockeye in Alaskan fisheries, the overall harvest rate was 17% of the run, which is the smallest in recent years, excluding 2009 and 2013. Table 35

DFO's near-final estimates of spawning escapements to streams in the Fraser River watershed are still in progress. Preliminary estimates of the 2016 spawning escapements are shown in Table 36

In-season management decisions are based on targets for spawning escapement, which are represented in-season by potential spawning escapement targets (i.e., spawning escapement targets plus MAs). In-season estimates of potential escapement (i.e., Mission escapement minus all catch above Mission) were 10-20% under the target for all management groups: Early Stuart sockeye (11% under), Early Summer-run (11% under), Summer-run (20% under) and Late-run sockeye (15% under). Table 37

There was no TAC (Total Allowable Catch) of Fraser sockeye, based on the calculation method set out in Annex IV, Chapter 4 of the Pacific Salmon Treaty and the February 17, 2011 Commission Guidance. The Washington catch of 1,700 Fraser sockeye was 1,700 fish more than their 16.5% share. The total Canadian catch of 136,800 Fraser sockeye (excluding the ESSR catch of 0 Weaver sockeye and including a catch of 800 fish in the Albion test fishery) was 800 fish more than the Canadian 83.5% of international TAC + AFE. In these calculations, the TAC is fixed on the date that Panel control of the last U.S. Panel Area was relinquished (October 1 in 2016), while catches are preliminary post-season estimates. Table 38

Tables & Figures

With the exceptions of Tables 32 & 34, all tables and figures are adapted from or courtesy of the Pacific Salmon Commission.

Table 32. - Pre-season run size abundance forecast range and final in-season estimate of run size by management group for Fraser Sockeye.

	Probability that Return will be at/or Below Specified Run Size					Final in-season
	10%	25%	50%	75%	89,000	
Early Stuart	13,000	22,000	36,000	59,000	89,000	18,000
Early Summer	120,000	217,000	447,000	1,003,000	2,703,000	240,000
Summer	640,000	992,000	1,677,000	2,962,000	5,023,000	520,000
Late	41,000	65,000	111,000	203,000	366,000	75,000
Total	814,000	1,296,000	2,271,000	4,227,000	8,181,000	853,000

Table 33. - Pre-season (top) and Preliminary post-season (bottom) values for TAC and other management parameters.

Date	Management Group	Total Abundance	TAC*							Available Harvest**	Catch to date	Mission Passage to date	50% Migration Date
			Spawning Escapement Target***	pMA	Management Adjust.	Test Fishing****	Aboriginal Fishery Exemption	Total Deductions	Total Allowable Catch				Area 20
Pre-season	Early Stuart	36,000	36,000	NA	NA	100	3,500	36,000	0	0			3-Jul
	Early Summer	447,000	178,800	0.59	105,500	3,800	79,400	367,500	79,500	162,700			21-Jul
	Summer	1,677,000	722,000	0.11	79,400	11,200	296,100	1,108,700	568,300	875,600			6-Aug
	Late	111,000	111,000	NA	NA	400	21,000	111,000	0	0			14-Aug
	Sockeye	2,271,000	1,047,800		184,900	15,500	400,000	1,623,200	647,800	1,038,300	0	0	
October 1 TAC Date	Early Stuart	18,000	18,000	NA	NA	175	1,300	18,000	0	0	1,600	17,900	3-Jul
	Early Summer	240,000	156,000	0.59	92,000	3,000	22,700	240,000	0	0	26,300	228,700	20-Jul
	Summer	520,000	520,000	0.11	57,200	6,000	101,000	520,000	0	0	113,200	476,000	30-Jul
	Late	75,000	75,000	NA	NA	1,000	5,400	75,000	0	0	6,200	64,700	8-Aug
	Sockeye	853,000	769,000		149,200	10,175	130,400	853,000	0	0	147,300	787,300	

* The TAC is determined by the run sizes and TAC deductions (spawning escapement targets, management adjustments, projected test fishing catches and AF Exemptions) that were in effect when Panel control of the last U.S. fishery area was relinquished

** Available Harvest = Total abundance minus spawning escapement target and Management Adjustment.

*** Spawning Escapement Target not in place until July 12 Panel meeting

**** Test Fishing deductions not in place until July 15 Panel meeting

Table 34. - 2016 Fraser sockeye Escapement Plan and application of plan to each management group across a range of forecast abundances.

Management Unit	Harvest Rule Parameters Low Abundance	Lower Fishery		Upper Fishery		Pre-season pMA
	ER (LAER)	TAM Cap	Reference Point	Reference Point		
Early Stuart	10%	60%	108,000	270,000		0.69
Early Summer (w/o misc)	10%	60%	100,000	250,000		0.59
Summer (w/o misc)	10%	60%	640,000	1,600,000		0.11
Late (w/o misc)	20%	60%	300,000	750,000		0.47

Management Unit	Pre-season Forecast Return					
	forecast	p10	p25	p50	p75	p90
Early Stuart		13,000	22,000	36,000	59,000	89,000
TAM Rule (%)		0%	0%	0%	0%	0%
Escapement Target		13,000	22,000	36,000	59,000	89,000
MA		9,000	15,200	24,800	40,700	61,400
Esc. Target + MA		22,000	37,200	60,800	99,700	150,400
LAER		10%	10%	10%	10%	10%
ER at Return		0%	0%	0%	0%	0%
Allowable ER		10%	10%	10%	10%	10%
available harvest		1,300	2,200	3,600	5,900	8,900
<u>2016 Performance</u>						
Projected S (after MA)		7,000	12,000	19,000	31,000	47,000
BY Spawners		26,233	26,233	26,233	26,233	26,233
Proj. S as % BY S		27%	46%	72%	118%	179%
cycle avg S		35,861	35,861	35,861	35,861	35,861
Proj. S as % cycle S		20%	33%	53%	86%	131%

Management Unit	Pre-season Forecast Return					
		p10	p25	p50	p75	p90
Early Summer (w/o RNT)	lower ref. pt. (w misc)	156,000	156,000	156,000	156,000	156,000
	upper ref. pt. (w misc)	390,000	390,000	390,000	390,000	390,000
	forecast (incl. misc)	120,000	217,000	447,000	1,003,000	2,703,000
TAM Rule (%)		0%	28%	60%	60%	60%
Escapement Target		120,000	156,000	178,800	401,200	1,081,200
MA		70,800	92,000	105,500	236,700	637,900
Esc. Target + MA		190,800	248,000	284,300	637,900	1,719,100
LAER		10%	10%	10%	10%	10%
ER at Return		0%	0%	36%	36%	36%
Allowable ER		10%	10%	36%	36%	36%
available harvest		12,000	21,700	162,700	365,100	983,900
<u>2016 Performance</u>						
Projected S (after MA)		68,000	123,000	179,000	401,000	1,081,000
BY Spawners		276,018	276,018	276,018	276,018	276,018
Proj. S as % BY S		25%	45%	65%	145%	392%
cycle avg S		132,183	132,183	132,183	132,183	132,183
Proj. S as % cycle S		51%	93%	135%	303%	818%

Management Unit	Pre-season Forecast Return					
		p10	p25	p50	p75	p90
Summer (w. RNT & Har)	lower ref. pt. (w misc)	722,000	722,000	722,000	722,000	722,000
	upper ref. pt. (w misc)	1,805,000	1,805,000	1,805,000	1,805,000	1,805,000

forecast	640,000	992,000	1,677,000	2,962,000	5,023,000
TAM Rule (%)	0%	27%	57%	60%	60%
Escapement Target	640,000	722,000	722,000	1,184,800	2,009,200
MA	70,400	79,400	79,400	130,300	221,000
Esc. Target + MA	710,400	801,400	801,400	1,315,100	2,230,200
LAER	10%	10%	10%	10%	10%
ER at Return	0%	19%	52%	56%	56%
Allowable ER	10%	19%	52%	56%	56%
available harvest	64,000	190,600	875,600	1,646,900	2,792,800

2016 Performance

Projected S (after MA)	519,000	722,000	722,000	1,185,000	2,009,000
BY Spawners	559,387	559,387	559,387	559,387	559,387
Proj. S as % BY S	93%	129%	129%	212%	359%
cycle avg S	656,591	656,591	656,591	656,591	656,591
Proj. S as % cycle S	79%	110%	110%	180%	306%

Management Unit		Pre-season Forecast Return				
		p10	p25	p50	p75	p90
Late (w/o Har)	lower ref. pt. (w misc)	396,000	396,000	396,000	396,000	396,000
	upper ref. pt. (w misc)	990,000	990,000	990,000	990,000	990,000
	forecast	41,000	65,000	111,000	203,000	366,000
	TAM Rule (%)	0%	0%	0%	0%	0%
	Escapement Target	41,000	65,000	111,000	203,000	366,000
	MA	19,300	30,600	52,200	95,400	172,000
	Esc. Target + MA	60,300	95,600	163,200	298,400	538,000
	LAER	20%	20%	20%	20%	20%
	ER at Return	0%	0%	0%	0%	0%
	Allowable ER	20%	20%	20%	20%	20%
	available harvest	8,200	13,000	22,200	40,600	73,200

2016 Performance

Projected S (after MA)	22,000	35,000	60,000	110,000	199,000
BY Spawners	61,209	61,209	61,209	61,209	61,209
Proj. S as % BY S	36%	57%	98%	180%	325%
cycle avg S	134,046	134,046	134,046	134,046	134,046
Proj. S as % cycle S	16%	26%	45%	82%	148%
Available Harvest (TF, US, CDN)	85,500	227,500	1,064,100	2,058,500	3,858,800
Total projected spawners	616,000	892,000	980,000	1,727,000	3,336,000

Table 35. - Preliminary post-season catch and exploitation rate estimates by management group by US, Canada, and Fraser Panel test fisheries.

	Early Stuart	Early Summer	Summer	Late	Total
CANADIAN CATCH	1,400	23,300	106,600	5,500	136,800
Commercial Catch	0	0	0	0	0
Panel Area Non-	0	0	0	0	0
Panel Areas	0	0	0	0	0
First Nations Catch	1,400	23,100	106,000	5,400	136,000
Marine FSC	0	4,300	24,900	2,900	32,100
Fraser River FSC	1,400	18,800	81,100	2,600	103,900
Economic Opportunity	0	0	0	0	0
Non-commercial Catch	10	100	600	90	800
Marine Recreational	0	0	0	0	0
Fraser Recreational	0	0	0	0	0
Charter (Albion)	10	100	600	90	800
ESSR	0	0	0	0	0
UNITED STATES CATCH	10	600	900	90	1,700
Washington Total	10	600	900	90	1,700
Commercial catch	10	300	500	50	800
Treaty Indian	10	300	500	50	800
All Citizen	0	0	0	0	0
Non-commercial Catch	0	300	500	40	800
Ceremonial	0	300	500	40	800
Recreational	0	0	0	0	0
Alaska	<i>not yet available</i>				
TEST FISHING CATCH	200	2,500	5,700	600	8,800
PSC (Panel Areas)	200	1,800	4,000	400	6,400
Canada	200	1,800	4,000	400	6,400
United States	0	0	0	0	0
Canada (non-Panel Areas)	10	600	1,600	200	2,400
TOTAL RUN accounted to date (22-Sep)	18,000	240,000	527,000	70,000	855,000
Total Catch in All Fisheries	1,600	26,400	113,200	6,200	147,400
preliminary ER	9%	11%	21%	9%	17%

Table 36. - Preliminary Spawning escapement by management group.

Management Group	Preliminary post-season run size	Spawning Escapement			
		Post-season Target	Adult Estimate	Difference	
				Fish	%
Sockeye salmon	855,000	771,000	165,400	-128,400	-44%
Early Stuart	18,000	18,000	8,600	-9,400	-52%
Early Summer	240,000	156,000	156,400	400	0%
Summer	527,000	527,000	<i>assessments underway</i>		
Late	70,000	70,000	<i>assessments underway</i>		

Table 37. - Comparison of in-season targets and in-season estimates of potential spawning escapement (PSE) for adult Fraser River sockeye salmon.

Management Group	Final In-season Abundance Estimate	Potential Spawning Escapement (PSE)					
		Spawning Escapement Target	Management Adjustment *	In-season PSE ** Target	PSE *** Estimate	Difference	
						Fish	%
Adult sockeye	853,000	769,000	149,200	853,000	708,000	-145,000	-17%
Early Stuart	18,000	18,000	NA	18,000	16,000	-2,000	-11%
Early Summer	240,000	156,000	92,000	240,000	214,000	-26,000	-11%
Summer	520,000	520,000	57,200	520,000	414,000	-106,000	-20%
Late	75,000	75,000	NA	75,000	64,000	-11,000	-15%

* Adjustment of spawning escapement targets to achieve spawning escapement goals.

** Spawning escapement target + MA. If the spawning escapement target + MA exceeds the total abundance, then the target equals the total abundance.

*** Mission passage minus all catch above Mission.

Table 38. - Total Allowable Catch table

	Sockeye	
TOTAL ALLOWABLE CATCH		
In-season Total Run Size		853,000
Deductions		1,063,100
In-season Spawning Escapement Target		769,000
In-season Management Adjustment		149,200
Aboriginal Fishery Exemption (AFE)		136,000
Post-season Test Fishing Catch		8,800
Total Allowable Catch	1, 2	0
UNITED STATES		
Washington Share		-900
Washington Share of TAC	1, 3	0 16.5%
Payback		-900
Washington Catch		1,700
In-season Alaska Catch Estimate		0
CANADA		
Canadian Share of TAC + U.S. Payback + AFE		136,000
Canadian Catch excluding ESSR Catch		136,800

1 TAC and Washington sockeye share according to Annex IV, Chapter 4 of the Pacific Salmon Treaty.

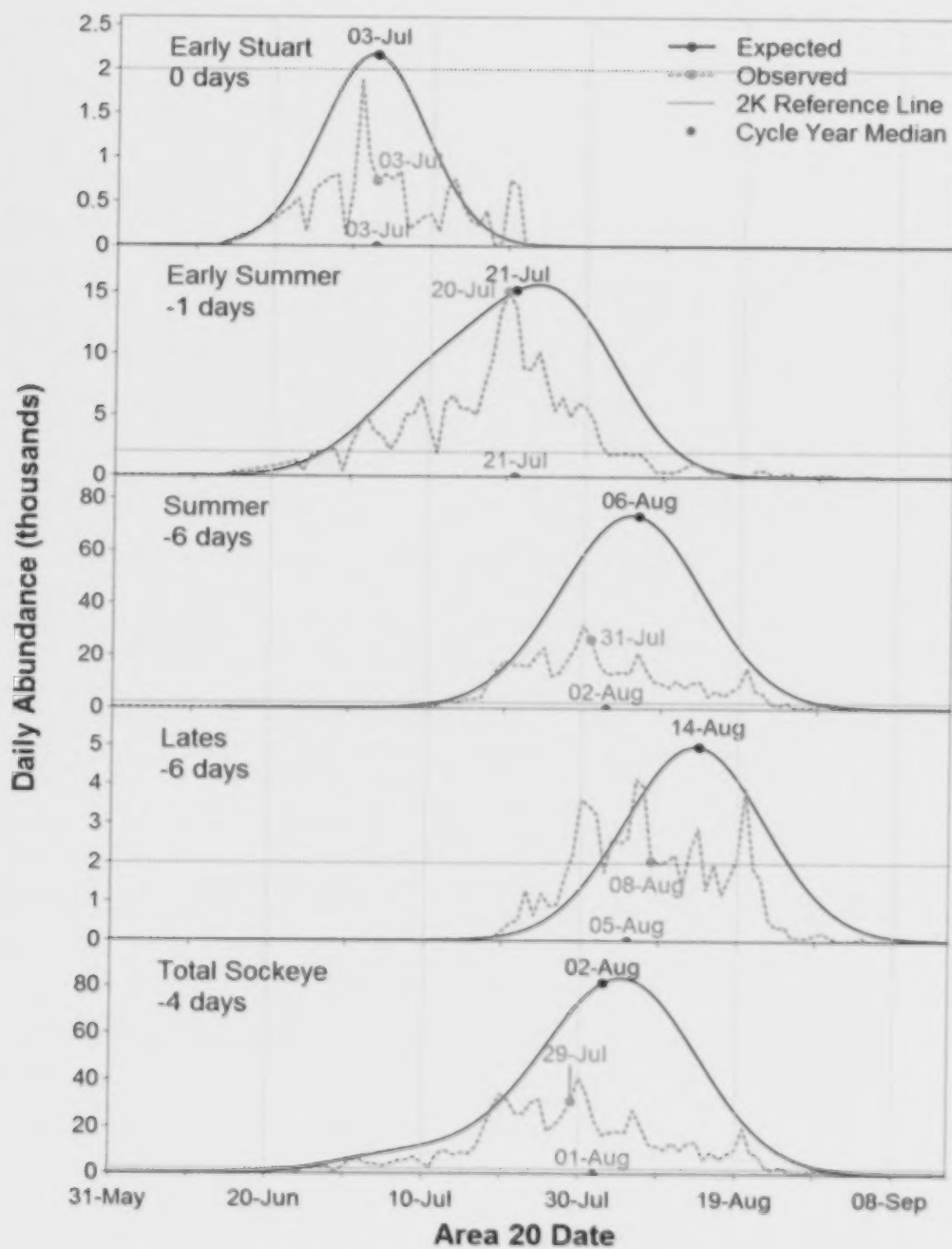
2 TAC may not equal the total run minus total deductions shown due to adjustments required when the run size of individual management groups is less than the nominal deductions. A more detailed TAC calculation showing these intermediate calculations is shown in Table 7 in Appendix I.

3 United States share according to revised Annex IV of the Pacific Salmon Treaty:

Sockeye: 16.5% of the TAC - payback (maximum 5% of share).

Pink: 25.7% of the TAC - payback (maximum 5% of share).

Figure 43. - Pre-season projections and post-season reconstructions of daily Fraser River sockeye salmon abundance by management group.



First Nations Food Social and Ceremonial and Treaty Fisheries

There were directed harvest opportunities for Fraser sockeye in First Nations FSC fisheries in both the marine and freshwater areas. For preliminary catch estimates, see Table 35.

Recreational Fisheries

There were no recreational fisheries directed on Fraser River sockeye.

Commercial

Commercial Harvest

No directed commercial fisheries directed on Fraser River sockeye in Canada.

First Nation Commercial Harvest

There were no First Nation commercial harvest opportunities directed on Fraser River sockeye.

Excess Salmon to Spawning Requirements (ESSR) Fisheries

There were no ESSR opportunities directed on Fraser River sockeye.

FRASER RIVER PINK

Pink salmon return to the Fraser River in significant numbers on odd years only; negligible numbers of pink salmon returned to the Fraser River in 2016.

SOUTHERN B.C. COHO

Objectives and Overview

Coho stocks in Southern B.C. are managed domestically and through international Abundance Based Management provisions which are outlined in the Pacific Salmon Treaty. Harvest levels are outlined in the Treaty's Southern Coho Management Plan, which provides maximum exploitation rates dependent on abundance, and it is Canada's responsibility to ensure that its domestic stocks are not harvested beyond the maximum exploitation rate as outlined in the Treaty.

In Southern B.C., coho management measures in commercial and recreational fisheries are implemented based on their impacts to specific stocks. Southern B.C. coho management is primarily based on managing Interior Fraser River, Lower Fraser, Strait of Georgia, Johnstone Strait and WCVI coho stocks or MUs.

Beginning in 1997, DFO implemented a number of fishery management measures to reduce the harvest impacts on Interior Fraser River coho, with more severe measures being implemented starting in 1998. From that time to 2013, Canadian fisheries impacting these stocks were curtailed to limit the exploitation rate to 2 to 3 percent, with an additional 10 percent permitted in U.S. fisheries (as per the Pacific Salmon Treaty management regime). In 2015, an exploitation rate of up to 10% was permitted in Canadian fisheries. Despite some improvements to forecast returns and spawner abundances in some recent years, there is no evidence that IFR coho has departed from the 'low' productivity regime that has persisted since the 1994 return year. Current productivity is still well below that in the relatively high productivity period of 1978-1993. Spawner abundances in 2015 were well below recent years' levels and pre-season expectations based on projected fisheries impact and the 2015 forecast range highlighting continued uncertainties about stock productivity and/or fisheries impacts.

In 2016 an exploitation rate of 3-5% was permitted in Canadian fisheries with an additional 10 percent permitted in U.S. fisheries (as per the Pacific Salmon Treaty management regime). Coho management measures varied in Southern B.C. in 2016, depending on the area of harvest and impact on specific coho stocks.

In 2016, Canada did not articulate a specific ER objective for IFR coho domestically given that the models for assessing fisheries impacts were under review and could not measure compliance with an ER objective. Instead, the objective articulated domestically was "to manage Canadian fisheries in a highly precautionary manner with fisheries management measures similar to those in place prior to 2014".

While the status of Interior Fraser coho stocks has generally remained poor in spite of the low total exploitation rate limit, there are indications in recent years that their condition might be improving. In addition, there have been improved returns of coho in Northern B.C., the west Coast of Vancouver Island and inside Strait of Georgia stocks in recent years.

The aggregate wild coho escapement (generation 2012-2014) to the Interior Fraser River watershed averaged 39,500 adults (geometric mean). This is an increase over previous generational averages since conservation measures were implemented in 1997-1998. Based on analysis of the returns and exploitation rate (ER) analysis a decision was made to increase the ER from 3 percent to a maximum of 10 percent for Canadian fisheries in Southern BC. For Canadian fisheries, management measures were relaxed for FSC fisheries in the BC Interior and the lower Fraser including mainstem areas. In the marine recreational fishery, retention of additional enhanced coho and in some areas and times retention of one unmarked coho was allowed. Commercial fisheries, including First Nation economic, demonstration and commercial fisheries, were not permitted to retain coho in most southern BC waters. Additional fishing effort for more abundant stocks and species was permitted resulting in increased impacts on coho as release mortalities in these fisheries.

No specific management measures were in place in 2016 to protect Strait of Georgia coho stocks beyond measures put in place for Interior Fraser River coho.

Management measures in place for WCVI coho provided opportunities for recreational and commercial fisheries harvest, in WCVI areas where Interior Fraser coho were not considered to be impacted. These were largely terminal opportunities in portions of Area 23-27, where stock composition information showed that Interior Fraser River coho were not found.

In WCVI areas/times where Interior Fraser River coho are known to be prevalent, non-retention of unmarked coho remained in effect. Commercial troll fishery plans permitted marked coho retention on the WCVI once Interior Fraser River coho were considered to have moved through the area.

Preliminary coho catch and release information from all fisheries can be found in Table 50.

Stock Status

Upper Fraser

Field programs to estimate escapements are still underway, and only very preliminary results are available for some systems. Early returns to the Interior Fraser River indicate that escapement may be similar to 2013 brood escapements. Very preliminary data indicate returns to the entire Interior Fraser River may be above 50,000; however, preliminary estimates are not yet available for many systems, and near final estimates will not be available until early February 2017, as most field studies are not yet completed.

Lower Fraser River

Escapement studies are currently underway, and many populations have not reached peak spawning at the time of writing. Preliminary escapement estimates for the surveyed systems should be available by late February 2017.

A hatchery coho indicator stock is provided by Inch Creek hatchery. Adult escapement is assessed annually and marine survival and exploitation rates are calculated, these estimates are not yet available. Adult coho visual surveys are conducted for a number of systems within the lower Fraser River sub-area as part of multi-species assessments; however, estimates are not yet available as the field programs will not be complete until late January or early February 2017.

Strait of Georgia

Coho salmon have been in a low productivity regime since the early 1990s. Marine survivals have been less than replacement levels for several years, but have been slowly increasing since the late 2000s. 2016 estimates are not yet complete so the information presented below must be considered preliminary and subject to change.

Hatchery Stocks

The preliminary 2016 coho escapement estimates of monitored hatcheries show mixed results over the previous year. Escapements to northern Strait of Georgia stocks (Puntledge, Qualicum, and Lang) are higher than the previous year and similar to the five year average.

Escapements to southern Strait of Georgia stocks are not monitored outside of Goldstream River, where results will not be available until January. Early results indicate that escapements are below the five year average with the exception of Shawnigan Creek.

Wild Stocks

In the past, both Black Creek and Myrtle Creek have served as indicators of Strait of Georgia Coho. Myrtle Creek was discontinued as an indicator in 2014. Only a few other wild populations are monitored with any consistency. The Colquitz River, near Victoria, is one of those systems. It has been monitored by local community groups for over 10 years. This year, the abundance of coho returning to the Colquitz River was twice the four year average.

Black Creek

The 2016 Black Creek adult project is on-going; escapement to date has been below average. The majority of adult Coho moved past the fence during rain events of Oct 5th-Oct 14th; the fence was breached shortly thereafter during the high water that followed. As the carcass recovery portion of the program is on-going, the escapement estimate for this population is not yet available, but will likely be similar to last year's return of approximately 3,500 adults. The smolt production contributing to the 2016 return (from the 2013 parental brood of 10,378 adults) was the lowest juvenile migration recorded since 1996, possibly due to the drought conditions of 2014. The 2016 adult return may have also been impacted by poor marine conditions existing during the 2015-2016 marine residence of Strait of Georgia coho salmon.

West Coast Vancouver Island

In most recent years, spawning abundances for wild WCVI coho populations are near historic levels. However, the overall production of WCVI coho is lower than historic levels – i.e. less fish are caught in fisheries because low fishery impacts are maintaining spawning levels. Hatchery production has also been

reduced. Data are not finalized for 2016; however preliminary results suggest about average returns relative to recent years.

Johnstone Strait and Mainland Inlets

The Keogh River plays an important role as the wild coho indicator stock for the upper Johnstone Strait area. Smolt production in 2015 was around 112,000, the largest outmigration since the inception of the program in 1977. Preliminary indications from the resulting adult escapement in 2016 are that marine survival was again low relative to the steady improvements we had seen prior to 2015. Adult returns in 2016 were an improvement over last year's low return with a preliminary estimate of 1,700 coho. Smolt production from the Keogh in 2016 of approximately 92,000 is again well above the long term average of 74,000. This strong smolt production will hopefully buffer the poor marine condition anticipated to persist through 2016 and 2017. Expectation in 2017 will be for below average returns.

The marine survival indicator for Area 13 is the Quinsam River Hatchery. Consistent with a continuation of poor marine conditions, the Quinsam coho return was below average, at approximately 8,000 similar to that of 2015. The jack component was also noticeably lower than in past years.

Preliminary extensive escapement reports for coho in many systems are indicating moderate to low abundances, a decline from last year and slightly below average. The building trend of the past few years looks to have reverted back to average to below average escapements and indications are that poor coho returns will likely continue in 2017.

First Nations

WCVI FSC and Treaty Fisheries

There were FSC gill net and hook and line openings during the summer and fall season. The Somass First Nations harvest was 1,867 pieces. The Maa-nulth domestic harvest was 578 pieces. The remainder of WCVI First Nation's reported catch was 4,254 pcs coho. The combined harvest was 6,699 coho.

Lower Fraser

There were no coho-directed fisheries in the Lower Fraser in 2016. Lower Fraser FSC fisheries targeting other species of salmon encountered 2,611 coho, of which 2,067 were kept and 544 were released. Both hatchery marked and wild coho were authorized to be retained in FSC fisheries.

B.C. Interior

There were no EO, Demonstration or ESSR fisheries in the B.C. Interior (Fraser River above Sawmill Creek) targeting coho in 2016. FSC fisheries in the area target sockeye, chinook or pink salmon. In 2016, First Nations were requested to release unharmed any coho caught as by-catch. Directed opportunities were permitted, subject to abundance, in Dunn Creek and the Bonaparte River, tributaries to the Thompson River. Preliminary catch reports indicate 53 coho were retained in directed FSC fisheries in the Thompson River system.

Strait of Georgia FSC Fisheries

Data are still being compiled on various First Nations catches in the Strait of Georgia with total preliminary catch estimate at 2,048 coho caught in FSC fisheries.

Johnstone Strait

Data are still being compiled on various First Nations catches in the Johnstone Strait with the total preliminary catch estimated at 701 coho caught in FSC fisheries.

Recreational Fisheries

Tidal Recreational Fisheries

Tidal sport fisheries can be categorized as occurring in: mixed stock areas, where multiple stocks are found concurrently in the same fishing area, and in terminal areas where local single stocks dominate the catch. Areas where mixed stocks occur typically have more restrictive management measures in place that are designed to protect Interior Fraser coho stocks. In terminal areas, opportunities are provided based on abundance forecasts. From 1998-2013, all Canadian recreational, commercial and First Nations fisheries were managed to limit the exploitation rate on Interior Fraser coho stocks to 3%. In 2014 DFO approved a temporary increase in the exploitation rate on Interior Fraser coho up to 16%, based on improved abundance forecasts. In 2015 DFO reduced the Canadian exploitation rate to a maximum of 10%, again based on forecasted abundance. In 2016 DFO returned to a 3% exploitation rate on Interior Fraser coho.

The table below outlines the areas in Southern B.C. and the general coho regulations pertaining to them.

Table 39. - Southern B.C. coho fishery regulations in 2016.

Mixed stock fishing area	Daily Limit (marked or unmarked)	Size Limit	Coho Season
Johnstone Strait	2, 1 may be unmarked	30 cm.	June 1 – Jul 31
Johnstone Strait	2 marked	30 cm.	Aug 1 – Dec 31
Northern Georgia Strait	2 marked	30 cm.	June 1 – Dec 31
Southern Georgia Strait	2 marked	30 cm.	June 1 – Dec 31
Southern Georgia Strait (19)	2, 1 may be unmarked	30 cm.	Oct 1 – Dec 31
Juan de Fuca Strait	2 marked	30 cm.	Jun 1 – Dec 31
Juan de Fuca Strait (20-5 to 20-7)	4, 1 may be unmarked	30 cm.	Oct 1 – Dec 31
WCVI - Inshore	2	30 cm.	June 1 – Dec 31
WCVI - Offshore	2 marked	30 cm.	June 1 – Dec 31

* For specific management measures in specific areas refer to the information provided in the Fishery Notices.

The table below outlines coho catch and release information for sport coho fisheries in Southern B.C. The WCVI coho fisheries use the surfline as a boundary between distinguishing coho catch in the mixed-stock fishery (offshore) and catch in the terminal area (inside the surfline).

Table 40. - Preliminary recreational coho estimates for Southern B.C. in 2016.

Area	Kept	Released
WCVI – Inshore (20W – 27)	16,132	8,030
WCVI – Offshore (21 – 127)	5,692	9,000
Strait of Georgia (13-19 May – Sep*)	8,142	29,525
Fraser River**	8	0
Juan de Fuca (19-20 Feb – Oct)	7,581	16,194
Johnstone Strait (11-12 Jun-Aug)	4,449	4,461
TOTALS	41,996	67,210

** Lower Fraser recreational fisheries estimates not yet available at the time of this report.

Note: Fraser R. data represents in-season preliminary info to Sep. 15, 2016 and is subject to further updates from Fraser R. Stock Assessment.

Non-Tidal Sport

Region 1 Vancouver Island Tributaries

Fresh water restrictions were in effect in most tributaries on Vancouver Island due to drought like conditions in 2016. Rivers on the southern half of Vancouver Island (Regions 1-1 to 1-6) were closed to angling on July 1st 1. Region 1 rivers were re-opened on September 16 due to improved water flows and near-normal temperatures.

Northern Vancouver Island

Typical non-tidal openings for coho are available on:

- Cayeghle River (including the Colonial River) from April 1 to March 31 for one per day;
- Campbell/Quinsam River from October 1 to December 31 for four per day, two of which could be marked over 35 cm;
- Cluxewe River from April 1 to March 31 for two per day, hatchery marked only;
- Kokisilah River from April 1 to March 31 for one per day, maximum size limit of 35 cm;
- Nahwitti River from April 1 to March 31 for one per day; and
- Quatse River from June 15 to March 31 for two per day, hatchery marked only.

Strait of Georgia

Typical non-tidal openings for coho are available on:

- Qualicum River from October 16 to December 31 for four per day, two of which could be over 35 cm;
- Chemainus River from October 15 to March 31 for one per day, maximum size limit of 35 cm;
- Nanaimo River from November 1 to March 31 for one per day, maximum size limit of 35 cm; and

West Coast Vancouver Island

- Somass/Stamp River from August 25 to December 31 the daily limit was two, marked or unmarked. The Somass/Stamp Rivers were not monitored by creel survey during 2016. A single barbless hook restriction is in effect all year and there is a bait restriction in the Upper Somass and Stamp from May 1 to October 31.
- Nitinat River from October 15 to December 31 the daily limit for coho was two, marked or unmarked. The 2 week closure between October 1 and October 14 provides protection to chinook salmon during the peak spawning period. The Nitinat River was not monitored by creel survey during 2016. The area above Parker Creek is closed to fishing. A single barbless hook restriction is in effect all year and there is also a bait restriction in effect.
- Conuma River opened August 25th with a daily limit of two coho, marked or unmarked but was reduced to one per day from September 26 to December 31 based on observations of lower than expected abundance in-river. The Conuma River was not monitored by creel survey during 2016.
- Washlawlis River and Waukwass River and other West Coast Rivers are open year-round with a daily limit of one coho, marked or unmarked. Barbless hooks are required. No creel survey information is collected. Other rivers receiving some directed effort for coho stocks are the Wakeman, Artlish, Zeballos, Tahsis, Burman, Ash, Taylor, Pacheena, Toquart and Leiner. The quota for all west coast streams unless identified above is zero.

Fraser River and Tributaries

During 2016, the retention of two hatchery marked coho per day was permitted once the majority of the Interior Fraser wild coho population was through the area. The dates by area were as follows:

- From the CPR Bridge at Mission, B.C. upstream to the Highway #1 Bridge at Hope - October 11 to December 31.
- From the Highway #1 bridge at Hope to Sawmill Creek - October 16 to December 31.
- There are no directed coho openings in the Fraser River or tributaries upstream of Sawmill Creek.

The following tributaries to the Fraser River were open during the dates stated below:

- Alouette River and De Boville Slough from October 1 to December 31 for one per day.
- Coquitlam River from September 1 to December 31 for one per day.

- Kanaka Creek from November 1 to November 30 for one per day.
- Chilliwack River/Vedder for four per day from July 1 to December 31.
- Chehalis River from January 1 to December 31 for four per day.
- Harrison River for four per day from September 1 to December 31.
- Nicomen Slough, Norrish Creek and the Stave River for four per day from January 1 to December 31 with only two over 35 cm.

During 2016, there were limited non-tidal openings for hatchery marked coho on the following systems which enter Boundary Bay:

- Little Campbell River, Nicomekl River and the Serpentine River one per day from September 1 to December 31.

Commercial Fisheries

Commercial (A-H Fisheries includes ATP)

In 2016, Southern B.C. commercial fisheries were regulated so that impacts on coho, in particular Interior Fraser coho stocks, were minimized. Retention of coho by-catch in most of these fisheries was not permitted, including the Fraser River, with the exception of a few terminal seine and gill net fisheries targeting chinook and sockeye where Interior Fraser River coho were not prevalent.

Area G troll AABM chinook fisheries were permitted to retain marked coho by-catch from September 15 until December 31, 2016.

For the 2015/2016 (October 1, 2015 to September 30, 2016) AABM chinook fishing periods, the estimated total coho retained was 3601 and releases during this period were estimated at 3,244 coho salmon.

WCVI Terminal Area Coho

In 2016, in Area 23 there were targeted coho Area D gillnet fisheries. There were also Area D gillnet fisheries in Alberni Inlet targeting sockeye, and chinook terminal returns, that permitted coho by-catch retention. Retention of both hatchery and wild coho were permitted.

In 23-1 there were targeted Coho fisheries with chinook by catch authorized in September in upper Alberni inlet in Subarea 23-1. These fisheries were designed to target coho and chinook salmon using small mesh nets. The fisheries were restricted to 6 and 1/4 inch mesh. The openings were 12 hours in duration and occurred Sept 15, 16, 19, 20, and 21. The fisheries were not successful. The total coho catch was 742 pieces with a chinook bycatch of 781 pieces

The sockeye and chinook fisheries in Area 23 bycatch of coho salmon was 66 pieces. Coho retention in other terminal WCVI commercial fisheries was not permitted in 2016. The total WCVI coho by-catch in commercial gillnet fisheries was 808 pieces retained.

Excess Salmon Spawning to Requirements (ESSR)

WCVI ESSR Fisheries

The Tseshaht and Hupacasath First Nations were issued a joint ESSR Licence for coho at the Robertson Creek Hatchery facility. The total catch was 7,048 coho. The Ditidaht First Nation was issued an ESSR Licence for Nitinat Lake and the Nitinat Hatchery, but no harvest occurred.

The total catch WCVI for the ESSR fisheries was 7,048 coho.

Lower Fraser ESSR Fisheries

There were several ESSR fisheries in the Lower Fraser Area for First Nations. These were conducted at Capilano, Chilliwack, and Inch Creek Hatcheries for a total coho catch of 23,668 (total includes 1,230 jacks). Chehalis Hatchery reported no coho harvest for ESSR in 2016.

Tenderfoot and Weaver Creek Hatcheries did not conduct ESSR fisheries in 2016.

Strait of Georgia ESSR Fisheries

ESSR harvest at the Big Qualicum hatchery included catch of 7,688 coho (total includes 1852 jacks). ESSR harvest at Chapman Creek hatchery included 16 coho.

Johnstone Strait ESSR Fisheries

Currently there are no ESSR opportunities on coho in Johnstone Strait

JOHNSTONE STRAIT CHUM

Objectives and Overview

The Johnstone Strait chum fisheries primarily target chum that spawn in Johnstone Strait, Strait of Georgia, and Fraser River areas. In order to improve the management of Johnstone Strait chum fisheries and to ensure sufficient escapements, a 20% fixed exploitation rate strategy was implemented in 2002 in Johnstone Strait. Of the 20% exploitation rate, 15% is allocated to the commercial sector and the remaining 5% is set aside for test fisheries, First Nations FSC, sport harvesters, and to provide a buffer to commercial exploitation. Since the implementation of this management strategy, annual fisheries have been planned well in advance of the chum return.

The pre-season commercial fishing plan was developed based on expectation of effort, exploitation levels by gear group, and historical run timing (peak estimated as October 9). The fishing plan was developed to achieve the commercial allocation sharing guidelines of 77% for seine, 17% for gill net and 6% for troll. Adjustments to the fishing plan are made in-season, if warranted.

As outlined in Chapter 6 of the Pacific Salmon Treaty, commercial chum fisheries in Johnstone Strait are suspended when an abundance estimate of less than 1 million chum salmon migrating through Johnstone Strait is identified. This did not occur in 2016 and all fisheries proceeded as scheduled.

In 2016, the Area B (seine) and Area D (gill net) were competitive derby fisheries, and the Area H (troll) fleet was managed using an effort-based individual transferable effort (ITE) demonstration fishery.

Chum catch and release information from all fisheries can be found in Table 51.

Stock Status

Mixed Stocks

The main components of the Inside South Coast (ISC) chum return were expected to be both Fraser and non-Fraser stocks. These stocks are typically dominated by four year old fish which were from an average 2012 brood return that out-migrated to the ocean in 2013. It was quite apparent that other salmon species that also out-migrated in 2013 encountered improved survival conditions (i.e. pink and coho returns in 2014). The pre-season expectation for ISC chum suggested near target returns to the area but was highly uncertain.

The Johnstone Strait test fishery, which ran from September 12th through October 28th, provided timing and abundance information for the 2016 return, which is important in assessing the performance of the 20% fixed exploitation rate strategy. It also provided an index of abundance, used to determine the likelihood of the number of returning chum being over the 1.0 million critical level (requirement for commercial openings). Chum catch per unit effort in the test fishery was significantly higher than what was encountered in the low 2010 return and it was determined that the ISC index of abundance was likely above the 1.0 million critical level (Figure 44). The timing of the run also appeared to be later than average based on the peak CPUE observed in the test fishery. As expected, the age composition derived from the test fishery and commercial samples was dominated by 4 year olds throughout the season.

Preliminary information on escapements and catches to date suggest returns were very strong and well above average to most Inner South Coast chum populations. In-season information is still being collected and analyzed regarding total stock size.

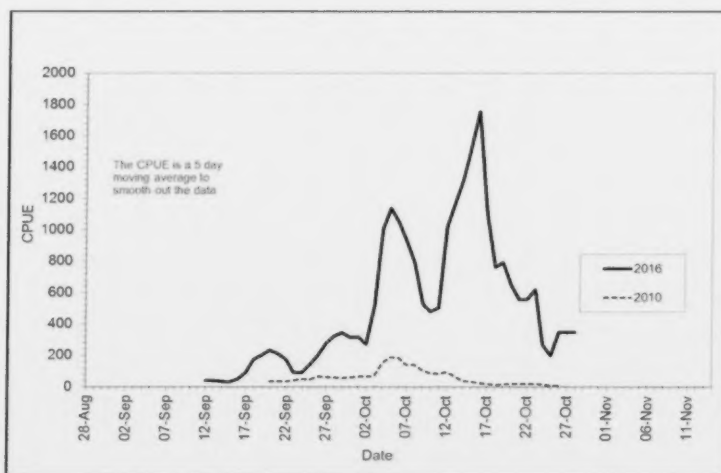


Figure 44. - 2016 Johnstone Strait Chum Test Fishery Catch per Unit Effort (CPUE) comparison to 2010 (lowest chum return in recent years)

Terminal Returns

Preliminary information on the status of summer run chum in the Johnstone Strait area indicated varied returns. Assessments of terminal fall chum, such as the Nimpkish, have been hampered with high river flows during the fall and little information is available at this time on the status of those stocks.

First Nations Fisheries

First Nations fisheries for chum were not restricted. The preliminary estimated catch by First Nations in the Johnstone Strait area is 20,494 chum salmon.

Recreational Fisheries

Tidal Recreational Fisheries

The marine recreational daily limits for chum are four with a possession limit of eight salmon. Chum opportunities are typically opened at full limits in the Johnstone Strait area. Peak participation in the recreational chum fishery typically occurs over the Thanksgiving weekend in mid-October, and activity is usually driven by abundance. There was no Creel survey during the month of October in Areas 11 to 13, but recreational catches were reported as being excellent given the strong chum returns through Johnstone Strait. The majority of the sport chum salmon fishing effort occurs in Area 13 which is included in the Strait of Georgia catch estimate.

Incidentally caught coho salmon can be caught in this fishery. All wild coho must be released, but retention is permitted for 2 hatchery marked coho per day.

Non-Tidal Recreational Fisheries

There are no chum retention fisheries in non-tidal waters in the Johnstone Strait area.

Commercial Fisheries

Commercial (A-H includes ATP)

The commercial chum fisheries in Johnstone Strait were planned for September 28 to October 31, 2016. The total commercial chum catch from Johnstone Strait during chum directed fisheries is estimated at 1,333,478 pieces. Area and gear restrictions, including the mandatory use of revival tanks, were in place for commercial chum fisheries. Catch monitoring included requirements for catch reporting and mandatory logbooks.

A description of each fishery is provided below.

Area B Seine

In 2016, there were two commercial seine openings for chum salmon in portions of Areas 12 and 13. The first opening took place on October 3 for twelve hours. The second opening took place on October 17 for 10 hours and October 18 for 4 hours. The second opening was originally scheduled for ten hours but additional fishing time was granted during the second opening due to poor weather conditions that hampered fishing during the first opening.

The chum catches for the first and second openings were estimated at 179,063 pieces and 868,660 pieces respectively; for a total catch of 1,047,723 chum. Additionally, there were estimated to be 1 sockeye, 176 coho, and 12 pink salmon kept during the first opening and 2 pink salmon kept during the second opening. The total releases from the fishery were estimated at 14 sockeye, 454 coho, 5 pink, 20 adult chinook, 3 jack chinook, and 9 steelhead.

Area D Gill net

In 2016, there were three commercial gill net openings for chum salmon in portions of Areas 12 and 13. The first opening was for 41 hours from 16:00 hours on October 6 to 09:00 hours on October 8. The second opening was for 63 hours from 16:00 hours on October 10 to 09:00 hours on October 13. The third opening was for 41 hours from 16:00 hours on October 25 to 09:00 hours on October 27.

Pre-season, each Area D gill net opening was planned for 41 hours in duration but was subject to change based on in-season assessment information, weather constraints, and effort information. Additional fishing time was granted on the second opening due to poor weather conditions that hampered fishing on the first opening.

The estimated chum catches for the three Area D gill net fisheries were 76,260 pieces, 75,523 pieces and 68,962 pieces respectively; for a total estimated catch of 220,745 chum. Five pink salmon were estimated to be retained in all three openings.

Other species that were estimated to be released in all three openings combined were as follows: 377 coho, 11 pink, 28 chinook, and 22 steelhead.

Area H Troll

In 2016, the Area H troll ITE demonstration fishery was divided into two fishing periods: September 28 to October 11 (period 1) and October 13 to October 31 (period 2); with a one day closure between the two periods on October 12, and closures during the Area B seine fisheries on October 3 and 17 (except Subarea 13-3). Each licence was initially allocated three boat days during the first fishing period and two boat days during the second fishing period. Boat days could be transferred between vessels within each fishing period but not between fishing periods.

The catch for the first fishing period was 29,779 chum, and 35,231 chum for the second fishing period, for a total catch of 65,010 chum. Total effort for the Johnstone Strait fishery was 247 boat days: 137 in period 1 and 110 in period 2. No other species were reported as kept during the fishery, but there were an estimated 3 sockeye, 89 coho, 1 pink, 15 legal chinook, 27 sub-legal chinook, and 35 chinook grilse released during the troll fishery.

Table 41. - Johnstone Strait Commercial Catch and By Date and Gear Type

Gear Type	Fishery Dates	Effort^a	Catch
B – Seine	Oct 3	85	179,063
	Oct 17/18	83/75	868,660
D - Gill net	Oct 6-Oct 8	160	76,260
	Oct 10-Oct 13	171	75,523
	Oct 25-Oct 27	105	68,962
H – Troll	Sep 28-Oct 11	137	29,779
	Oct 13-Oct 31	110	35,231

^aNumber of unique vessels for each seine and gill net opening, and boat days for troll by fishing period.

Table 42. - Johnstone Strait Fisheries Catch and Allocation

Gear Type	Total Catch	% of catch	J.S. Allocation Plan
Area B	1,047,723	78.6%	77%
Area D	220,745	16.6%	17%
Area H	65,010	4.9%	6%
Total Catch:	1,333,478		

First Nations Commercial Harvest

There was no First Nations commercial harvest of Johnstone Strait chum in 2016.

ESSR

Currently there are no ESSR opportunities on chum in Johnstone Strait.

FRASER RIVER CHUM

Objectives and Overview

Chum salmon return to the Fraser River from September through December, with the typical peak of migration through the lower river occurring from mid to late-October. Spawning locations are predominately located in the Fraser Valley downstream of Hope, B.C., with major spawning aggregations occurring within the Harrison River (including Weaver Creek and Chehalis River), the Stave River, and the Chilliwack River. No spawning locations have been identified upstream of Hells Gate.

The escapement objective for Fraser River chum is 800,000. Since 2001, this objective has been achieved in all but two years. Escapements in 2009 and 2010 did not meet the escapement goal, with approximately 460,000 and 550,000 returning to spawn in those years, respectively.

Fraser River chum are typically harvested in Johnstone Strait, the Strait of Georgia, U.S. waters of Area 7 and 7A, and in the Fraser River.

Within the Fraser River, chum directed fisheries include: First Nations FSC fisheries; sport fisheries; and commercial fisheries. In recent years, significant conservation measures have been implemented in-river during the Fraser River chum migration period, in order to protect co-migrating stocks of concern (including Interior Fraser coho and Interior Fraser steelhead).

Depending on the fishery, these measures have included both time and area closures, as well as gear restrictions. These conservation measures have restricted Fraser River commercial chum fishing opportunities in recent years.

Catch data from all chum fisheries can be found in Table 51.

Stock Status

The number of adult chum returning to the Fraser River each fall is estimated in-season with a Bayesian model based on Albion test fishing catch.

The Fraser River chum test fishery at Albion operated every other day from September 1 until October 19, alternating days with the Albion chinook test fishery. From October 21 until November 15, the chum net fished every day, and then every other day from November 17 until November 23. In 2016, the total number of chum harvested during the Albion chum test fishery was 9,956, and an additional 2,349 pieces were harvested during the Albion chinook test fishery.

For fishery planning purposes, DFO provided a provisional in-season update on October 17 of 1.55 million chum. This estimate assumed that the peak date of the run was no later than October 17.

A subsequent estimate of Fraser River chum abundance was provided on October 26. The estimated terminal return on that date was 2.00 million (80% probability interval of 1.26 to 3.63 million), with a 50% migration date through the lower river of October 20th. This peak date is consistent with timing in recent years (average peak date from 1997-2012 is October 18).

Additional in-season estimates were not provided, as subsequent test fishing information was consistent with a run size of 2.00 million.

Fraser River chum salmon return to numerous spawning locations in the lower Fraser River and its tributaries. The escapement goal for Fraser Chum is 800K. Spawning escapement for Fraser River chum salmon is currently assessed for four of the six largest chum producing systems, as well as for a number of smaller tributaries. The largest observed escapement of Fraser River chum (greater than 3 million fish), was seen in 1998. However, since 1998, Fraser Chum salmon escapement, for the annually assessed systems, trended downward to 2010. The escapement decline was halted and reversed with an estimated 1.1 million spawners reported in 2011.

Spawning escapement has remained stable through 2015.

Current year escapement assessment programs are still ongoing, and preliminary estimates of escapement are not available. However, lower Fraser River harvest estimates and distribution and abundance observations of spawners to-date suggest terminal run size will approach the Oct.26, 2016 Albion-based in-season estimate of 2.0 million chum salmon.

First Nations Fisheries

FSC gill net fisheries commenced October 8 (below Mission) and October 14 (above Mission), following closures to protect co-migrating Interior Fraser coho. The estimated kept catch from the chum directed FSC fishery below Sawmill Creek was 60,540 chum, 744 chinook, and 1,870 coho. The estimated released catch in this fishery was 10 sockeye, 1 chinook, and 26 coho. FSC fisheries targeting other species of salmon harvested 1,199 chum.

Recreational Fisheries

In 2016, only one of the major Fraser River watershed sport salmon fisheries impacting chum salmon was assessed, this was the significant salmon fishery occurring in the Chilliwack River (a tributary to the Fraser River in the lower Fraser Valley).

The lower Fraser River mainstem sport fishery was open to the retention of chum salmon from August 1 to August 11 and September 19 to December 31 (with a daily limit of two upstream and four downstream of

Mission Bridge); the Fraser mainstem was closed to fishing for salmon prior to August 1 and from August 12 to September 18. In 2016, this mainstem fishery was assessed in the periods opened to the retention of chum until September 30. However, similar to 2014 and 2015, this assessment was truncated in October where past assessments have shown the majority of chum catch occurs (from 2007 through 2012, this sport fishery was assessed to October 15 in all years, and November 30 in 2007 and 2012). Preliminary estimates of kept and released chum salmon are not yet available. The Chilliwack River sport fishery was open to the retention of chum salmon from July 1 to December 31 (with a daily limit of one). This Chilliwack River fishery was assessed from September 15 to November 15 in 2016. Preliminary estimates of kept and released chum salmon are not yet available.

The Harrison River, Stave River and Nicomen Slough sport fisheries were open to the retention of chum salmon year round (daily limit of two). In 2016, no assessment was conducted on the Harrison River or Stave River fisheries; however, the Nicomen Slough fishery was assessed from October 7 to November 30. Preliminary estimates of kept and released chum salmon are not yet available.

Commercial Fisheries

Commercial (A-H Fisheries includes ATP)

Area E

Commercial fisheries in the lower Fraser River (below Mission) remained closed during the Interior Fraser River coho window closure, and further closures were in place until later in October to meet the Interior Fraser steelhead management objectives. Two Area E Gill Net commercial openings took place in the Fraser River (Area 29) during the 2016 chum season, consisting of a ten hour fishery on October 24 and a ten hour fishery on October 27, for a total estimated harvest of 175,906 chum salmon retained and 11 chum released. Additionally, there were estimated to be 3 chinook and 179 coho salmon kept; releases from the two fisheries were estimated at 49 chinook, 919 coho, 21 steelhead and 62 sturgeon.

There were no Area E fisheries for Fraser sockeye in 2016 and therefore no by-catch retention of chum salmon to report.

Area B

Area B seine was also provided a limited opportunity in Area 29 that took place on October 27 and 28 for a total estimated harvest of 472 chum salmon retained and 0 chum released and no reported by-catch.

There were no Area B fisheries for Fraser sockeye in 2016 and therefore no by-catch retention of chum salmon to report.

Area H

Area H was provided an opportunity in Area 29 that took place from October 24 to November 4 for a total estimated harvest of 0 chum retained and 0 chum released (no fishing activity occurred).

First Nations Commercial Harvest

Fraser River First Nations commercial chum fisheries for gill net and beach seine were conducted between October 22 and November 7. There were 132,848 chum, 4 chinook and 286 coho harvested in Economic Opportunity fisheries. There was 1 chum, 283 chinook, 414 coho, 52 sockeye, 3 pink, released in Economic Opportunity fisheries. Tsawwassen First Nation as part of their harvest agreement kept 13,672 chum, 2 chinook, and 17 coho salmon and released 17 chinook and 6 coho.

Musqueam and Tsawwassen First Nations Economic Opportunities consisted of two daylight only gill net opportunities with both First Nations fishing on October 26, Tsawwassen fishing October 29, and Musqueam fishing November 5th.

The First Nations above the Port Mann bridge (Sto:lo First Nations) Economic Opportunity fisheries were conducted with beach seines and gill nets. The beach seine fisheries were authorized for 3 days on October 20, November 4, and November 7. They also had a daylight only gill net opportunity on October 31.

The Harrison Fisheries Authority (Sts'ailes and Scowlitz First Nation) Economic Opportunity fishery was authorized for 4 days of beach seine fishing October 24, October 25, November 3 and November 8. They were not authorized any gillnet opportunities for their Economic Opportunity fishery.

Excess Salmon to Spawning Requirements (ESSR) Fisheries

There were several ESSR chum fisheries in the Lower Fraser Area for First Nations. These were conducted at Chehalis, Chilliwack, and Inch Creek Hatcheries for a total chum catch of 26,045. The Capilano Hatchery reported no chum harvest for ESSR in 2016. Tenderfoot and Weaver Creek Hatcheries did not conduct ESSR fisheries in 2016.

STRAIT OF GEORGIA CHUM

Objectives and Overview

Strait of Georgia chum fisheries consist of terminal opportunities for chum returning to their natal spawning streams. Many of the potential terminal fishing areas have enhancement facilities and/or spawning channels associated with the rivers. Terminal fishery strategies consist of monitoring and assessing stocks (escapement and returning abundance), with the objective of ensuring adequate escapement and providing harvest opportunities where possible. Stock assessments may include test fisheries, escapement enumeration including swim surveys, stream walks, channel entry counts, fence counts, Sonar (DIDSON) counts and over flights. In some areas where stocks receive considerable enhancement or where stocks have above average productivity, limited fishing may occur prior to major escapement occurring.

A productivity analysis was conducted in 2014 in order to review escapement targets in the major chum systems of the Strait of Georgia. The results of this analysis have led to new interim escapement targets in Big Qualicum, Little Qualicum and Nanaimo Rivers.

Commercial Overview

Area 14

Chum returning to this area have been enhanced since the late 1960s and terminal fisheries have occurred in October and November since the 1970s. The returning Area 14 chum abundance is forecasted pre-season using brood escapement, average survival and age composition. In-season run strength is assessed from any early catches, visual observations at river estuaries and by escapement counts to the three major river systems.

This fishery is directed at the enhanced stocks of three systems: Puntledge, Qualicum and Little Qualicum Rivers. The Qualicum River is often referred to as the 'Big' Qualicum River, to better distinguish it from the Little Qualicum River. The interim escapement goals for the three river systems are 60,000 for Puntledge River, 85,000 for Little Qualicum River, and 85,000 for Qualicum River, adding up to an overall interim escapement goal of 230,000 chum, not including enhancement facility requirements (about 10,000 chum, bringing the total escapement goal to 240,000). Escapement goals on the Qualicum and Little

Qualicum rivers were reduced in 2014 from 130,000 and 100,000 respectively, as a result of the productivity analysis conducted for chum systems in the Strait of Georgia.

The Area 14 fishery has a specific harvest strategy, implemented since 1981. The strategy consists of limited early harvest prior to escapement occurring. The allowable early chum harvest is calculated from 65% of the predicted surplus (terminal return run size minus escapement of 240,000 and buffer of 100,000). The buffer safeguards against errors in forecast stock abundance. The surplus within the 100,000 buffer and remaining 35% of the surplus may be harvested provided that escapement targets have been achieved. If there is no significant surplus identified in the pre-season forecast, potential fishing opportunities are determined in-season based on pre-set in-river escapement targets and run timing information.

In 2016, a surplus above the escapement target was observed in all Area 14 systems. An Area D Gill Net fishery open November 1 and remained open until November 25. The Area B Seine fishery opened on November 5 and remained open until November 25. The Area H Troll fishery was open however there was no participation. The catches in the fisheries were 231,097 chum for Area B Seine and 38,193 for Area D Gill Net.

Area 16

This fishery targets wild chum stocks returning to river systems in the Jervis Inlet area. The main systems are Tzoonie, Deseriet and Skwawka Rivers. The overall escapement goal for Jervis/Narrows Inlet Rivers is 85,000. These terminal fisheries occur when the individual or combined escapement goals have been assured. Fishing opportunities do not occur on a regular basis. There were no fisheries in Area 16 in 2016.

Area 17

This fishery is a terminal fishery targeting Nanaimo River stocks. The Nanaimo River chum stocks are supplemented by the Nanaimo River hatchery (supplementation is on a sliding scale), where increased enhancement occurs during poor escapement years. Escapements fluctuate annually and fishery openings are planned in-season based on escapement estimates. The overall interim escapement goal for the Nanaimo River is 40,000.

Nanaimo River assessments include swims by Nanaimo River Hatchery staff, a sonar counting system (DIDSON) and spot counts or helicopter counts by DFO during the peak of the return when possible. The DIDSON was installed and operational on October 5 until November 21; due to heavy storms and debris the DIDSON was not operational from October 14 until October 19 when the water level decreased enough to remain operation. The Preliminary escapement estimate based on DIDSON data is approximately 100,000, although these data are very preliminary and will change upon further review.

In 2016 there were Area E Gill Net and Area B Seine openings for Nanaimo River chum. The Area E Gill Net fishery opened October 17 and the Area B Seine fishery opened on October 27; the Area E Gillnet fishery was on October 17, 18 and 21 and then daily from October 24 until November 17 and the Area B Seine fishery opened daily from October 27 until November 17. The fisheries closed for the season on November 17. The catches in the fisheries were 86,187 for gill nets and 61,600 for seines.

Area 18

This fishery is directed primarily at Cowichan River stocks; however incidental catches of Goldstream bound chum are also harvested. Fishery openings in mid to late November are limited to Satellite Channel, in order to minimize impacts on Goldstream stocks. Chemainus River stocks could also be impacted if the fisheries are earlier in November, but likely to a lesser extent.

Fishery openings are planned in-season based on escapement estimates from a DIDSON counter and information from a test fishery. Management is also guided by advice from the Cowichan Fisheries Roundtable and the Mid Vancouver Island (MVI) Chum Subcommittee, and an in-season Chum Escapement Forecast Tool based on the DIDSON count and date. The overall escapement goal for the Cowichan River is currently 160,000 chum counted by the DIDSON counter.

The DIDSON was installed on October 11. The preliminary escapement estimate was 230,000 chum.

A weekly conference call was held with the Cowichan Fisheries Roundtable to discuss stock status and potential fishing opportunities in Area 18. In 2016, a commercial opportunity was triggered on October 25 when the Didson chum count was near 50% of the escapement target of 160,000 chum. The Cowichan Tribes Demo fishery began October 26 for approximately 13% of the forecasted surplus for the week. The Cowichan Tribes Demonstration fishery was licenced to fish on October 26, October 29 to November 4, and from November 8 daily until November 30. The Preliminary Cowichan Tribes Commercial Demonstration catch is approximately 13,090 chum. The Area E Gill net fishery began in Area 18 on October 27. Area E Gillnets fished in Area 18 on October 27 and 28, October 31 and November 1 and then daily from November 4 until 29. The total Area E commercial chum catch is estimated to be approximately 198,000 chum. The Area B Seine fishery began on November 2. Area B commercial seine fisheries occurred daily from November 2 until November 22. The total Area B commercial chum catch is estimated to be approximately 91,000 chum.

Area 19

This fishery is directed primarily at Goldstream River stocks, although some Cowichan River chum salmon are also harvested. Fishery openings set for mid to late November are limited to the portion of Saanich Inlet (Sub area 19-8) which is outside or to the north of Squally Reach. This area restriction is implemented to minimize impact on Goldstream chinook and coho stocks.

Fisheries are planned in-season based on escapement estimates. Area 19 falls under the same management regime as Area 18. The overall escapement goal for the Goldstream River is 15,000. Weekly (or bi-weekly in 2016) stream walks are conducted on Goldstream River by Goldstream Hatchery staff to estimate chum escapement. In 2016, enumerations began on October 12. The preliminary escapement estimate is 12,400.

There were no commercial chum fisheries in Area 19 in 2016.

Chum catch and release information from all fisheries can be found in Table 51.

Stock Status

Historically, chum returns have been highly variable relative to brood year escapements. For 2016, the forecast for Jervis/Narrows Inlet chum abundance was for slightly below to above the target level, and the Mid-Vancouver Island systems were near or well above the target level.

Nanaimo, Cowichan and Goldstream Rivers' chum abundance were forecast to be above to well above the target levels. All of these forecasted expectations are highly uncertain and a review of the procedures and data used for forecasting these systems will be conducted in the near future.

Conditions for returning chum migration and spawning were marginal at the beginning of the migration period in October due to low water levels, but rain events in mid-October and throughout November increased water levels so that migration was unimpeded.

Monitoring spawning escapements of chum are mostly completed now and data are currently being compiled and reviewed. The 2016 data reported in Table 43 below are very preliminary and will change

upon further review (especially the estimate for Nanaimo River). To date returns for the Jervis/Narrows Inlet aggregate (which includes Brittain River, Skwawka River, Deserted River, Vancouver River and Tzoonie River), the Mid-Vancouver Island systems, Nanaimo and Cowichan were at or above the expected range and reached the target escapements (Table 43). The Goldstream River chum abundance was well below the lower expected range and slightly below the target (Table 43).

Table 43. - Strait of Georgia Chum Preliminary Spawning Escapements

	Target Escapement	2016 forecast Expected range	Preliminary 2016 Escapement	% of target
Jervis/Narrows Inlet	85K	73K – 109K	110K	129%
Mid-Vancouver Island	240K	219K – 328K	381K	159%
<i>Puntledge</i>	<i>60K</i>		<i>80K</i>	<i>134%</i>
<i>Little Qualicum</i>	<i>85K (interim)</i>		<i>55K*</i>	<i>65%*</i>
<i>Big Qualicum</i>	<i>85K (interim)</i>		<i>246K</i>	<i>289%</i>
Nanaimo	40K (<i>interim</i>)	67K – 100K	100K	250%
Cowichan	160K	192K – 289K	230K	144%
Goldstream	15K	38K – 56K	12K	83%

- Little Qualicum preliminary 2016 escapement estimate includes spawning channel count only; river estimate is unavailable due to high water and unsafe survey conditions during migration. Spot check observations indicated a strong run with large numbers of chum spawning in the river.

First Nations Fisheries

The preliminary estimated FSC catch by First Nations in the Strait of Georgia is estimated to be approximately 4,622 chum.

Recreational Fisheries

Tidal Recreational Fisheries

Marine recreational chum fisheries are subject to the normal salmon daily and possession limits (limit of four per day and possession of eight), and are typically open throughout the area. The majority of the recreational effort directed at chum salmon in the Strait of Georgia occurs in the lower portions of the Discovery Passage area, particularly in the waters around Campbell River. The annual Brown's Bay Charity Chum Derby which took place on the weekend of October 15 and 16 is usually the most active chum recreational fishery in the area. Catches in the derby were reported to be excellent despite poor weather conditions. There was no Creel survey during the months of October and November in the Strait of Georgia, but recreational catches were reported as being excellent given the strong chum returns through Johnstone Strait and to local river systems throughout the Strait of Georgia.

Marine chum fisheries also occur in the approach waters of the Puntledge, Qualicum, Little Qualicum, Nanaimo and Cowichan Rivers on Vancouver Island, as well as in Howe Sound. Marine recreational catch for the Strait of Georgia Creel survey from March through September was estimated to be 1,475 chum (catch was from August and September). There was no Creel survey in the Strait of Georgia in October and November.

Incidentally caught coho and chinook can be caught during chum directed recreational fisheries in the Strait of Georgia.

Non-Tidal Recreational Fisheries

Chum retention fisheries in the Strait of Georgia took place in 2016 in the Cowichan, Nanaimo, Qualicum, Little Qualicum and the Puntledge Rivers on Vancouver Island. Recreational freshwater opportunities are typically based on escapement estimates from hatchery operations, and where escapement goals are expected to be met, opportunities are provided.

Annually, but subject to in-season assessment information, retention opportunities are provided pre-season in the following Strait of Georgia rivers:

- Nanaimo – November 1 to 30 – 2 chum per day
- Little Qualicum – October 1 to November 30 – 1 chum per day
- Qualicum River - October 1 to November 30 – 1 chum per day
- Puntledge - October 1 to November 30 – 2 chum per day

In early November, surplus chum returns were identified at the Cowichan, Nanaimo, Qualicum, Little Qualicum and the Puntledge Rivers and from November 7 to December 31 the retention of four chum per day was permitted in these river systems (where open to fishing). Catch monitoring programs did not take place in 2016 on these systems. Chum catch and effort from these freshwater fisheries is expected to be minimal. Other salmon and trout species may be caught while recreationally targeting chum salmon in Strait of Georgia river systems.

Commercial Fisheries

Commercial (A-H Fisheries includes ATP)

Strait of Georgia commercial chum fisheries for troll, gill net and seine were conducted in Areas 14, 17 and 18 between October 17 and December 1. The total commercial chum catch from the Strait of Georgia is estimated at 704,992 pieces (see Table 44 below). This total captures catch estimates as up to November 25, 2016. The gillnet fishery in Area 18 is ongoing. A description of each fishery is provided in the following table.

Chum catch and release information from all fisheries can be found in Table 51.

Table 44. - Strait of Georgia Commercial Chum Catch by Date and Gear Type

Fishery Date	Gear type	Area	Effort (boat days)	Catch
Oct 17-Nov 17	GN	17	400	86,187*
Oct 27-Nov 17	SN	17	74	61,600*
Oct 27-Nov 24*	GN	18	806	197,065*
Nov 2-Nov 24*	SN	18	127	90,850*
Nov 1 to Nov 25	GN	14	266	38,193*
Nov 15 to Nov 25	SN	14	166	231,097*

* Preliminary

First Nations Commercial Harvest

A weekly conference call was held with the Cowichan Fisheries Roundtable to discuss stock status and potential fishing opportunities in Area 18. In 2016, a commercial opportunity was triggered on October 25 when the Didson chum count was near 50% of the escapement target of 160,000 chum. The Cowichan

Tribes Demonstration fishery began October 26 for the approximate 13% of the forecasted surplus for the week. The Cowichan Tribes Demonstration fishery was licenced to fish on October 26, October 29 to November 4, and from November 8 daily until November 30. The Preliminary Cowichan Tribes Commercial Demonstration catch is approximately 13,090 chum.

Excess Salmon Spawning to Requirements (ESSR)

The Cowichan Tribes First Nation had an ESSR harvest at the CEDP hatchery on the Cowichan River. The First Nation harvested 10,200 chum salmon.

The Qualicum First Nation was issued an ESSR Licence for chum, coho and chinook at the Big Qualicum River hatchery. Catch numbers were preliminary at the time of this report but were reported as 44,186 chum being harvested.

The Comox First Nation was issued an ESSR license for the harvest of chum at the Puntledge River Hatchery which resulted in the harvest of 20,398 chum.

WEST VANCOUVER ISLAND CHUM

Objectives and Overview

Commercial chum salmon fisheries normally occur on the WCVI from late September to early November in years of chum abundance. The majority of chum fishing on WCVI takes place adjacent to Nitinat Lake (Area 21), in Nootka Sound, Tlupana and Esperanza Inlets (Area 25). In some recent years there have been limited-fleet gill net fisheries in Barkley Sound (Area 23), Clayoquot Sound (Area 24), Nootka Sound and Esperanza Inlet (Area 25).

Fisheries for WCVI chum employ a two-tiered strategy for controlling removals; either a constant harvest rate strategy or a surplus-to-escapement goal strategy.

Fixed Harvest Rate Strategy (fisheries targeting natural origin stocks, hatchery stocks at low abundance):

For those fisheries where a significant component of the target stock is from naturally spawning populations, a constant harvest rate strategy of 10-20% is implemented. The maximum harvest rate is set a precautionary level relative to stock-recruit derived optimal exploitation rates for WCVI chum; which are in the order of 30-40%. This approach allows limited harvest while protecting the biodiversity of chum stocks and permitting rebuilding when the population is low. In areas of low quality data or only naturally spawning stocks, including Barkley (Area 23), Clayoquot (Area 24), Esperanza Inlet (Area 25) and Kyoquot Sound (Area 26), the maximum allowable harvest rate is 10 to 15%. In Nootka Sound, up to 20% harvest is permitted given the prevalence of hatchery stock in the area. The harvest rate is controlled by limiting effort (i.e. number and duration of openings and, in some areas, the number of permitted vessels) and limiting fishing areas to approach areas only (i.e. to those areas where fish are migrating not holding).

Note: since 2013, a fixed harvest rate strategy has also been used to harvest Nitinat Hatchery chum when the stock abundance is considered above the lower fishery reference point but below the target fishery reference point. The maximum harvest rate for the Nitinat stock is 25% when it is below the target fishery reference point.

Surplus-to-Escapement Goal Strategy (fisheries targeting hatchery stocks at high abundance):

For fisheries that target primarily hatchery surpluses, the allowable harvest rate may be determined by the escapement goal when it is determined the stock is abundant (e.g. it is established that escapement is above the target reference point for fisheries). These fisheries occur only in 'terminal areas', defined as an area in

close proximity to the origin watershed of the target stock where little or no interception of other stocks occurs. Surplus to escapement goal fisheries for Conuma Hatchery stock occur within the Tlupana Inlet portion of Area 25. Surplus to escapement goal fisheries for Nitinat Hatchery stock occur in Area 21 near the mouth of Nitinat Lake or in Area 22 in Nitinat Lake. All Nitinat (and Conuma) hatchery chum are thermally marked, which allows for assessment of the hatchery contribution to fisheries and spawning.

Stock Status

In many recent years, the stock status of WCVI has been low: naturally spawning populations have been below target abundance despite the precautionary harvest regime. In addition, hatchery production levels have declined in recent years partially as a result of low abundance (i.e. hatcheries have not been able to achieve brood-stock targets in some years.) Therefore, in recent years, overall catches have declined relative to historic levels. However, like other South Coast areas in 2016, there were relatively abundant returns of chum to most WCVI areas and hatcheries, such as Nootka Sound and Nitinat Hatchery. This abundance was not observed in all areas, although extensive chum assessment is relatively data deficient.

First Nations Fisheries

Somass First Nations FSC catch was 711 chum. Maa-nulth domestic harvest was reported as 262 chum. The remaining WCVI NTC First Nations harvest reported to date is 1927 chum. The total combined catch for the WCVI First Nations was 2900 chum.

Recreational Fisheries

Non-Tidal Recreational Fisheries

Chum retention fisheries place in the Nitinat River on Vancouver Island (October 15-Dec 31). Recreational freshwater opportunities are typically based on escapement estimates from hatchery operations, and where escapement goals are expected to be met, opportunities are provided.

Chum returns to the WCVI were generally excellent in most systems in 2016, and as a result many recreational freshwater opportunities were available. Daily and possession limits are typically half of those provided in marine waters, with daily limits on most rivers being 2/day and 4 in possession. These limits were increased to 4/day in some systems on November 7 due to very strong chum returns. Catch monitoring programs did not take place in 2016 in WCVI river systems. Chum catch and effort from this fishery is expected to be marginal.

Tidal Recreational Fisheries

The WCVI recreational fishery is open year-round with a daily limit of four and possession of 8 chum. Anglers are restricted to the use of barbless hooks and there is a minimum size limit of 30 cm. In both offshore and inshore areas of WCVI, sport catch of chum is very low (estimated at less than 200 for all areas combined).

Commercial Fisheries

Commercial (A-H Fisheries includes ATP)

Commercial fisheries on the WCVI targeted two chum stocks in 2016: Nitinat (Area 21/121 and Nootka (Area 25).

Nitinat

In 2016, the preseason forecast of 475,000 allowed for full fleet fisheries for both gillnet and seine fisheries. These fisheries occurred from October 2nd to November 11th. The return was steady at the beginning of October and grew stronger each week. The weekly escapement goals were exceeded early in the season and allowed for both fleets to be open continuously until further notice to November 11th. Due to successful Johnstone Strait fisheries fleet sizes for both gear types were small from mid-October onward but catches were extremely good. The final forecast for Nitinat Chum was over 1 million. The catch by sector was Area B seine 269,000 and Area E gillnet 137,000 chum.

Nootka

Based on pre-season forecasts, a limited effort gillnet chum fishery, opened in Nootka Sound on September 27, 2016. Effort was initially limited to a maximum of 4 vessels fishing 2 days per week. CPUE's from the first week suggested that the return size was larger than the pre-season forecast and greater than the target reference point allowing for a full fleet opening; however, the maximum vessels participating at any one time was 7. The gillnet fishery was open two days a week (daylight hours only) from September 27th to October 19th. The total catch for the Area D gillnets was 13,336 chum retained with 59 coho and 7 chinook reported released.

First Nations Commercial Harvest

There were no First Nations commercial harvest fisheries for chum in 2016.

Excess Salmon to Spawning Requirements (ESSR) Fisheries

The Ditidaht First Nation was issued an ESSR Licence for chum at Nitinat Lake and Nitinat hatchery. The catch by gillnet in the lake was 33,879. There were also 82,347 swim ins at the Nitinat Hatchery facility. The total was 116,226 chum. There were no other chum ESSR fisheries on the WCVI in 2016.

APPENDICES

Table 45. – Catches in Canadian Treaty Limit Fisheries, 1996 to 2016 (Preliminary)

Fisheries Stocks	Species	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996
Stikine River (all gears)	Sockeye	86,729	60,046	42,800	36,146	30,352	55,623	50,543	48,049	33,614	59,237	101,209	83,890	84,866	58,784	17,294	25,600	27,468	38,055	43,803	65,559	74,281
	Coho	5,340	5,619	4,992	4,835	5,748	4,703	4,952	5,061	2,398	47	72	276	275	190	82	233	301	181	726	401	1,404
	Chinook-lg	2,731	4,157	3,308	3,415	4,573	2,307	1,766	2,330	7,866	10,576	15,776	18,997	3,857	1,396	1,362	1,480	3,086	2,916	2,164	4,483	2,471
	Chinook-jk	794	1,537	759	1,594	1,213	1,165	1,001	714	1,067	1,735	2,078	2,177	2,574	1,052	578	103	628	1,264	423	286	421
Taku River (commercial gill net)	Sockeye	37,624	19,747	17,872	21,163	30,209	24,012	20,211	11,057	19,445	16,564	21,093	21,932	19,860	32,730	31,053	47,660	28,009	20,681	19,038	24,003	41,665
	Coho	9,513	7,886	14,568	10,374	8,689	6,102	10,349	5,649	4,866	5,399	9,180	6,860	5,954	3,168	3,082	2,568	4,395	4,416	5,090	2,594	3,028
	Chinook-lg	1,021	868	2,472	738	1,909	2,333	4,658	7,031	1,184	862	7,312	7,534	2,074	1,894	1,561	1,458	1,576	908	1,107	2,731	3,331
	Chinook-jk	205	0	657	N/A	478	514	697	1,183	330	337	198	821	334	547	291	118	87	257	227	84	144
Alsek River (all gear)	Sockeye	815	1,084	1,140	508	1,786	2,110	1,716	717	0	1,340	1,327	594	2,122	2,795	2,255	1,177	745	554	585	520	1,361
	Coho	0	0	0	29	N/A	29	7	3	34	1	0	71	127	192	289	99	52	28	112	5	65
	Chinook	10	87	39	73	85	214	294	125	7	41	19	114	185	228	2,194	277	142	412	346	530	1,098
	Chinook	10	87	39	73	85	214	294	125	7	41	19	114	185	228	2,194	277	142	412	346	530	1,098
Area 3 (1-4)* (commercial net)****	Pink	*	80,266	450,671	1,249,570	118,164	160,757	30,686	404,460	8,336	1,740,270	228,378	878,552	402,459	667,103	876,631	473,318	127,000	2,162,280	61,000	329,000	987,000
Area 1 (commercial troll)****	Pink	*	41,551	31,775	84,216	57,013	52,221	19,948	60,402	29,295	61,276	34,854	39,430	27,751	98,347	41,418	175,000	28,295	25,000	0	261,000	732,000
North Coast** (troll - sport)	Chinook	190,180	158,901	221,001	115,914	120,305	122,660	136,613	109,470	95,647	144,235	215,982	243,606	241,508	191,657	150,137	43,500	32,048	70,701	144,650	145,568	26,900
West Coast Vancouver Island (troll - sport - FN)	Chinook	147,381 + 42,820	106,703 - 52,200	172,001 + 49,000	69,264 + 46,650	80,256 + 40,050	74,660 + 48,000	90,211 + 48,400	75,470 + 34,000	52,147 + 43,500	83,235 + 61,000	151,485 + 64,500	174,806 + 68,800	167,508 + 74,000	137,357 + 54,300	103,037 + 47,100						
	Chinook	48,374	113,293	178,558	108,710	130,719	206,509	137,600	125,488	143,817	139,150	145,970	195,791	210,875	179,706	165,824	102,266	89,139	28,540	10,855	59,796	3677
	Chinook	60,572 + 37,809 + 317 - 10,248	127,177 + 48,775 + 3,946	43,043 + 48,365 + 3,655	62,573 + 61,712 + 3955	123,930 + 61,822 + 4300	79,123 + 78,350 + 4289	53,191 + 52,698 + 5839	89,704 + 68,775 + 3381	87,921 + 50,319 + 3794	103,978 + 46,229 + 3794	143,614 + 36,992 + 5,000	168,837 + 52,177 + 5,000	152,677 + 42,038 + 27,029	134,308 + 31,516 + 23,964	78,302 + 24,923 + 21,634	64,216 + 41,777 + 6,400	6,906 + 41,777 + 6,400	6,678 + 41,777 + 6,400	53,396 + 41,777 + 6,400	4 - 3673	
	Chinook	48,374	113,293	178,558	108,710	130,719	206,509	137,600	125,488	143,817	139,150	145,970	195,791	210,875	179,706	165,824	102,266	89,139	28,540	10,855	59,796	3677
Fraser River Canadian Commercial Catch	Sockeye	0	0	7,945,474	2,124	0	443,000	9,305,104	0	16,942	0	4,633,623	137,000	1,993,800	1,042,986	2,182,700	295,000	953,000	54,000	1,295,000	8,737,000	1,019,000
Fraser River U.S. Commercial Catch	Pink	0	452	0	2,855,441	0	4,751,800	0	1,442,840	0	333,300	68,325	338,000	0	1,149,189	0	579,000	0	3,000	0	3,660,000	0
West Coast Vancouver Island (commercial troll)	Coho	774	18,126	32,992	5,499	1,988	0	458	0	369	1,424	2,399	5,989	0	0	0	0	0	0	0	0	761,000
Johnstone Strait (commercial catch)***	Chum	1,333,478	492,841	318,984	597,003	391,324	751,560	62,510	510,708	298,931	494,944	800,363	787,226	1,089,100	1,026,029	700,000	236,000	161,000	41,411	1,820,000	104,593	101,971

* AREA 5-11 CATCHES INCLUDED PRIOR TO 1995 AND EXCLUDED FROM 1995-1998 INCLUSIVE. NOT PART OF 1999 ANNEX IV PROVISIONS.

** NORTH COAST CATCH EXCLUDES TERMINAL EXCLUSION CATCHES OF 6,000 ('91), 6,100 ('92), 7,400 ('93), 6,400 ('94), 1,702 ('95), 16,000 ('96), 5,943 ('97), and 2,182 in 1998. NO TERMINAL EXCLUSION IN THE 1999 AGREEMENT - COVERED UNDER THE AABM ARRANGEMENT. CENTRAL COAST AREAS NOT PART OF 1999 ANNEX IV PROVISIONS.

*** CANADIAN CATCH INCLUDES COMMERCIAL, FSC AND TEST-FISH CATCHES IN AREAS 11-13 FOR 1991-94 INCLUSIVE, AND IN AREAS 12-13 FOR 1995 TO 2004 INCLUSIVE. 2002-PRESENT, CATCHES FROM FISHERIES MANAGED TO FIXED HARVEST RATE OF 20%.

**** ALL PINK CATCHES FOR ALL YEARS (1995-2012) IN AREAS 3(1-4) AND AREA 1 HAVE BEEN UPDATED TO REFLECT FINAL ESTIMATES.

NOTE 1: WCVI CHINOOK CATCHES FROM 1995-1998 ARE REPORTED BY CALENDAR YEAR; CATCHES FROM 2008-1999 ARE REPORTED BY CHINOOK YEAR (OCT-SEPT)

NOTE 2: 1999 CATCHES ARE REPORTED ACCORDING TO FISHERIES STOCKS UNDER THE 1999 ANNEX IV PROVISIONS.

Table 46. – Preliminary 2016 South Coast AABM Chinook Catches by Fishery and Area

PST Regime	Fishery	Month	Numbers	
			Kept	Released
WCVI-AABM Commercial	Area G Troll *	Oct-15	178	22
		Nov-15	13	0
		Dec-15	1	7
		Jan-16	51	104
		Feb-16	342	167
		Mar-16	315	150
		Apr-16	6,456	566
		May-16	31,799	919
		Jun-16	0	0
		Jul-16	0	0
		Aug-16	7,574	298
		Sep-16	2,390	850
First Nations Commercial Harvest	Taaq-wiihak	May - Sep	6,049	1,688
Total			55,168	4,771
Recreational	Sport	WCVI - Inshore (20W-27)	3,557	5,326
	Sport	WCVI - Offshore (121-127)	34,252	17,186
Total			37,809	22,512
First Nations FSC and Treaty	Johnstone Strait		0	0
	Strait of Georgia		0	0
	WCVI Offshore		2,346	0
	WCVI Inshore		0	0
	Fraser River		0	0
Total			2,346	0
All Total			95,323	27,283

Table 47. - Preliminary 2016 South Coast ISBM Chinook Catch by Fishery and Area

ISBM CHINOOK				
Fishery	Gear	Fishery (Area)	Numbers	
			Kept	Released
Commercial	Area G Troll	WCVI Chinook	0	0
	Area H Troll	Fraser Sockeye (12, 13)	0	0
	Area H Troll	Fraser Sockeye (29)	0	0
	Area H Troll	Fraser Pink (12, 13, 29)	0	0
	Area H Troll	JST Chum (12, 13)	0	77
	Area H Troll	Fraser Chum (29)		
	Area H Troll	MVI Chum (14-19)	0	0
	Area B Seine	Barkley Sockeye (23)	0	451
	Area B Seine	Fraser Sockeye (12, 13)	0	0
	Area B Seine	Fraser Sockeye (16)	0	0
	Area B Seine	Fraser Sockeye (29)	0	0
	Area B Seine	Mainland Pink (12, 13, 16)	0	0
	Area B Seine	Howe Sound Pink (28)	0	0
	Area B Seine	Fraser Pink (12, 13, 29)	0	0
	Area B Seine	Nitinat Chum (21, 121)	0	1
	Area B Seine	JST Chum (12, 13)	0	23
	Area B Seine	Fraser Chum (29)	0	0
	Area B Seine	MVI Chum (14-19)	0	0
	Area D Gillnet	Barkley Sockeye (23)	116	39
	Area D Gillnet	Barkley Chum (23)	0	0
	Area D Gillnet	Somass Chinook (23)	1,555	0
	Area D Gillnet	Clayoquot Chum (24)	0	0
	Area D Gillnet	Tlupana Chinook (25)	3,451	0
	Area D Gillnet	Nootka Chum (25)	0	7
	Area D Gillnet	Fraser Sockeye (11, 12, 13, 14)	0	0
	Area D Gillnet	JST Chum (12, 13)	0	28
	Area D Gillnet	MVI Chum (14)	0	0
	Area E Gillnet	Fraser Sockeye (29)	0	0
	Area E Gillnet	Fraser Chum (29)	3	49
	Area E Gillnet	Nitinat Chum (21, 121)	0	4
	Area E Gillnet	MVI (Area 17-19)		
Commercial Harvest Total			5,125	679
First Nations Commercial	Taaq-wihak HA	WCVI ISBM Chinook (25)	317	0
	Taaq-wihak HA	WCVI AABM Chinook (24-26, 124-126)	n/a	n/a
	Maa-nuth HA	Henderson Sockeye (23)		
	Harvest Agreement	Fraser River	2	17
	EO	Johnstone Strait		
	EO	Strait of Georgia		
	EO	WCVI	10,248	0
	EO	Fraser River	4	283
	Demo	Johnstone Strait		
	Demo	Strait of Georgia		
	Demo	WCVI		
	Demo	Fraser River		
First Nations Commercial Total			10,571	300
Total Combined Commercial Catch			15,696	979
Recreational	Sport	Juan de Fuca (19, 20)	22,866	23,886
	Sport	Strait of Georgia (13-19, 28, 29)	27,443	55,474
	Sport	Johnstone Strait (11-12)	8,349	7,148
	Sport	WCVI - Inshore (20W-27)	33,574	37,098
	Sport	Fraser River	1,368	126
Total Recreational Catch			94,200	123,730
First Nations FSC and Treaty		Johnstone Strait	347	
		Strait of Georgia	650	
		WCVI	3,526	0
		Fraser River	9,639	56
Total First Nations FSC Catch			14,162	56
ESSR		Johnstone Strait		
		Strait of Georgia*	3,028	0
		WCVI	37,322	
		Fraser River	0,712	0
Total First Nations ESSR Catch			47,062	0
TOTAL - ALL FISHERIES			171,120	124,765

Table 48. – Preliminary 2016 South Coast Sockeye Catch by Fishery and Area

Fishery	Gear	Fishery (Area)	Numbers			
			Non-Fraser Kept	Unknown Origin	Fraser Kept	All Stocks Released
Commercial	Area G Troll	WCVI AABM Chinook (23-27, 123-127)	0	0	0	0
	Area H Troll	Fraser Sockeye (12, 13)	0	0	0	0
	Area H Troll	Fraser Sockeye (20)	0	0	0	0
	Area H Troll	Fraser Pink (12, 13, 29)	0	0	0	0
	Area H Troll	JST Chum (12, 13)	0	0	0	3
	Area H Troll	Fraser Chum (29)				
	Area H Troll	MVI Chum (14)	0	0	0	0
	Area B Seine	Barkley Sockeye (23)	226,329	0	0	7
	Area B Seine	Fraser Sockeye (12, 13)	0	0	0	0
	Area B Seine	Fraser Sockeye (16)	0	0	0	0
	Area B Seine	Fraser Sockeye (29)	0	0	0	0
	Area B Seine	Mainland Pink (12, 13, 16)	0	0	0	0
	Area B Seine	Howe Sound (28)	0	0	0	0
	Area B Seine	Fraser Pink (12, 13, 29)	0	0	0	0
	Area B Seine	Nitinat Chum (21, 121)				
	Area B Seine	JST Chum (12, 13)	0	1	0	14
	Area B Seine	Fraser Chum (29)	0	0	0	0
	Area B Seine	MVI Chum (14-19)	0	0	0	0
	Area D Gillnet	Barkley Sockeye (23)	161,934	0	0	0
	Area D Gillnet	Barkley Chum (23)	0	0	0	0
	Area D Gillnet	Somass Chinook (23)	0	0	0	8
	Area D Gillnet	Clayoquot Chum (24)	0	0	0	0
	Area D Gillnet	Tlipans Chinook (25)	0	0	0	0
	Area D Gillnet	Nootka Chum (25)	0	0	0	0
	Area D Gillnet	Fraser Sockeye (11, 12, 13, 14)	0	0	0	0
	Area D Gillnet	JST Chum (12, 13)	0	0	0	0
	Area D Gillnet	MVI Chum (14)	0	0	0	0
	Area E Gillnet	Fraser Sockeye (29)	0	0	0	0
	Area E Gillnet	Fraser Chum (29)	0	0	0	0
	Area E Gillnet	Nitinat Chum (21, 121)				
	Area E Gillnet	MVI Chum (Area 17-19)	0	0	0	0
Commercial Harvest Total						
First Nations Commercial	T'aag-wihak HA	WCVI ISBM Chinook (25)	0	0	0	0
	T'aag-wihak HA	WCVI AABM Chinook (24-26, 124-126)	0	0	0	0
	Maa-nuth HA	Henderson Sockeye (23)	1,015	0	0	0
	Harvest Agreement	Fraser River			0	0
	EO	Johnstone Strait				
	EO	Strait of Georgia				
	EO	WCVI	171,617	0	0	0
	EO	Fraser River				
	Demo	Johnstone Strait				
	Demo	Strait of Georgia				
First Nations Commercial Total			172,632	0	0	0
Total Combined Commercial Catch			172,632	0	0	0
Recreational	Sport	Juan de Fuca (19, 20)			7	166
	Sport	Strait of Georgia (13-19, 26, 29)			0	360
	Sport	Johnstone Strait (11-12)			61	47
	Sport	WCVI - Inshore (20W-27)	53,647	0	0	0
	Sport	WCVI - Offshore (121-127)			25	5
	Sport	Fraser River				
Total Recreational Catch			53,647	0	93	598
First Nations FSC and Treaty		Johnstone Strait			32,211	
		Strait of Georgia			660	
		WCVI	37,352	0	0	0
		Fraser River			103,140	694
Total First Nations FSC and Treaty Catch			37,352	0	136,011	694
ESSR		Johnstone Strait				
		Strait of Georgia				
		WCVI	0	0	0	0
		Fraser River			0	0
ESSR Catch			0	0	0	0
TOTAL - ALL FISHERIES			263,631	0	136,104	1,292

Table 49. – Preliminary 2016 South Coast Pink Catch by Fishery and Area

Fishery	Gear	Fishery (Area)	Numbers		
			Kept	Released	
Commercial	Area G Troll	WCVI AABM Chinook (23 - 27, 123 -127)	5	1	
	Area H Troll	Fraser Sockeye (12,13)	0	0	
	Area H Troll	Fraser Sockeye (29)	0	0	
	Area H Troll	Fraser Pink (12, 13, 29)	0	0	
	Area H Troll	JST Chum (12,13)	0	1	
	Area H Troll	Fraser Chum (29)	0	0	
	Area H Troll	MVI Chum (14-19)	0	0	
	Area B Seine	Barkley Sockeye(23)	2	0	
	Area B Seine	Fraser Sockeye (12,13)	0	0	
	Area B Seine	Fraser Sockeye (16)	0	0	
	Area B Seine	Fraser Sockeye (29)	0	0	
	Area B Seine	Mainland Pink (12, 16)	0	0	
	Area B Seine	Howe Sound Pink (28)	0	0	
	Area B Seine	Fraser Pink (12, 13, 29)	0	0	
	Area B Seine	Nitinat Chum (21, 121)			
	Area B Seine	JST Chum (12,13)	14	5	
	Area B Seine	Fraser Chum (29)	0	0	
	Area B Seine	MVI Chum (14-19)	0	0	
	Area D Gillnet	Barkley Sockeye(23)	0	1	
	Area D Gillnet	Barkley Chum (23)	0	0	
	Area D Gillnet	Somass Chinook (23)	0	0	
	Area D Gillnet	Clayoquot Chum (24)	0	0	
	Area D Gillnet	Tlupana Chinook (25)	0	0	
	Area D Gillnet	Nootka Chum (25)	0	0	
	Area D Gillnet	Fraser Sockeye (11,12,13,14)	0	0	
	Area D Gillnet	JST Chum (12,13)	5	11	
	Area D Gillnet	MVI Chum (14)	0	0	
	Area E Gillnet	Fraser Sockeye (29)	0	0	
	Area E Gillnet	Fraser Chum (29)	0	0	
	Area E Gillnet	Nitinat Chum (21, 121)			
	Area E Gillnet	MVI Chum (Area 17-19)			
	Commercial Harvest Total			26	19
	First Nation Commercial	T'seq-wihak	WCVI ISBM Chinook(25)	0	0
		T'seq-wihak	WCVI AABM Chinook (24 - 26, 124 - 126)	0	1
		Maa-nuth HA	WCVI		
		Harvest Agreement	Fraser River	0	0
		EO	Johnstone Strait		
		EO	Strait of Georgia		
		EO	WCVI	0	0
		EO	Fraser River	0	3
		Demo	Johnstone Strait		
		Demo	Strait of Georgia		
		Demo	WCVI		
Demo		Fraser River			
Total First Nations EO Catch			0	4	
Total Commercial Catch			26	23	
Recreational	Sport	Juan de Fuca (19,20)	154	69	
	Sport	Strait of Georgia (13-19,26,29)	1,946	1,064	
	Sport	Johnstone Strait (11-12)	2,451	2,066	
	Sport	WCVI - Inshore (20W-27)	96	122	
	Sport	WCVI - Offshore (121-127)	36	170	
	Sport	Fraser River			
Total Recreational Catch			4,683	3,491	
First Nations FSC and Treaty		Johnstone Strait	2,437		
		Strait of Georgia	18		
		WCVI	25	0	
		Fraser River	1	0	
Total First Nations FSC Catch			2,481	0	
ESSR		Johnstone Strait			
		Strait of Georgia			
		WCVI	0	0	
		Fraser River	0	0	
Total First Nations ESSR Catch			0	0	
TOTAL - ALL FISHERIES			7,190	3,514	

Table 50. – Preliminary 2016 South Coast Coho Catch by Fishery and Area

COHO				
Fishery	Gear	Fishery (Area)	Numbers	
			Kept	Released
Commercial	Area G Troll*	WCVI AABM Chinook (23 - 27, 123 - 127)	360	3,244
	Area H Troll	Fraser Sockeye (12,13)	0	0
	Area H Troll	Fraser Sockeye (29)	0	0
	Area H Troll	Fraser Pink (12, 13, 29)	0	0
	Area H Troll	JST Chum (12,13)	0	89
	Area H Troll	Fraser Chum (29)		
	Area H Troll	MVI Chum (14-19)	0	0
	Area B Seine	Barkley Sockeye (23)	0	80
	Area B Seine	Fraser Sockeye (12,13)	0	0
	Area B Seine	Fraser Sockeye (16)	0	0
	Area B Seine	Fraser Sockeye (29)	0	0
	Area B Seine	Mainland Pink (12, 16)	0	0
	Area B Seine	Howe Sound Pink (28)	0	1
	Area B Seine	Fraser Pink (29)	0	0
	Area B Seine	Nitinat Chum (21, 121)	0	93
	Area B Seine	JST Chum (12,13)	176	454
	Area B Seine	Fraser Chum (29)	0	0
	Area B Seine	MVI Chum (14-19)	0	149
	Area D Gillnet	Barkley Sockeye (23)	0	218
	Area D Gillnet	Barkley Chum (23)	0	0
	Area D Gillnet	Somass Chinook (23)	800	0
	Area D Gillnet	Clayoquot Chum (24)	0	0
	Area D Gillnet	Tlupana Chinook (25)	0	1
	Area D Gillnet	Nootka Chum (25)	0	59
	Area D Gillnet	Fraser Sockeye (11,12,13,14)	0	0
	Area D Gillnet	JST Chum (12,13)	0	377
	Area D Gillnet	MVI Chum (14)	0	5
	Area E Gillnet	Fraser Sockeye (29)	0	0
	Area E Gillnet	Fraser Chum (29)	179	919
	Area E Gillnet	Nitinat Chum (21, 121)	0	93
	Area E Gillnet	MVI Chum (Area 17-19)	0	131
Commercial Harvest Total			1,515	5,913
First Nations Commercial	T'aaq-wihak	WCVI ISSM Chinook (25)	0	0
	T'aaq-wihak	WCVI AABM Chinook (24 - 26, 124 - 126)	414	417
	Maa-nulth HA	Henderson Sockeye (23)		
	Harvest Agreement	Fraser River	17	6
	EO	Johnstone Strait		
	EO	Strait of Georgia		
	EO	WCVI	2,764	
	EO	Fraser River	286	414
	Demo	Johnstone Strait		
	Demo	Strait of Georgia		
Total First Nations EOCatch			3,481	837
Total Commercial Catch			4,996	6,750
Recreational	Sport	Juan de Fuca (19,20)	7,581	16,194
	Sport	Strait of Georgia (13-19,28,29)	8,142	29,525
	Sport	Johnstone Strait (11-12)	4,449	4,461
	Sport	WCVI - Inshore (20W-27)	16,132	8,030
	Sport	WCVI - Offshore (121-127)	5,692	9,000
	Sport	Fraser River	8	0
Total Recreational Catch			42,004	67,210
First Nations FSC and Treaty		Johnstone Strait	701	
		Strait of Georgia	2,048	
		WCVI	6,699	
		Fraser River	2,094	771
Total First Nations FSC Catch			11,542	771
ESSR		Johnstone Strait		
		Strait of Georgia	7,688	
		WCVI	7,048	
		Fraser River	23,668	0
Total First Nations ESSR Catch			38,404	0
TOTAL - ALL FISHERIES			96,946	74,731

*Area G coho harvest estimate is based on the chinook year (Oct 1, 2015 to Sept 30, 2016). Total coho retained includes 107 from 2015 with the remainder in 2016 fisheries.

Table 51. – Preliminary 2016 South Coast Chum Catch by Fishery and Area

Fishery	Gear	Fishery (Area)	Numbers	
			Kept	Released
Commercial	Area G Troll	WCVI AABM Chinook (23 - 27, 123 - 127)	479	27
	Area H Troll	Fraser Sockeye (12,13)	0	0
	Area H Troll	Fraser Sockeye (29)	0	0
	Area H Troll	Fraser Pink (12, 13, 29)	0	0
	Area H Troll	JST Chum (12,13)	65,010	0
	Area H Troll	Fraser Chum (29)	0	0
	Area H Troll	MVI Chum (14 -19)	0	0
	Area B Seine	Barkley Sockeye (23)	0	0
	Area B Seine	Fraser Sockeye (12,13)	0	0
	Area B Seine	Fraser Sockeye (16)	0	0
	Area B Seine	Fraser Sockeye (29)	0	0
	Area B Seine	Mainland Pink (12,16)	0	0
	Area B Seine	Howe Sound Pink (28)	0	0
	Area B Seine	Fraser Pink (29)	0	0
	Area B Seine	Nitinat Chum (21, 121)	269,042	0
	Area B Seine	JST Chum (12,13)	1,047,723	0
	Area B Seine	Fraser Chum (29)	472	0
	Area B Seine	MVI Chum (14-19)	383,547	0
	Area D Gillnet	Barkley Sockeye (23)	3	1
	Area D Gillnet	Barkley Chum (23)	0	0
	Area D Gillnet	Somass Chinook (23)	1	169
	Area D Gillnet	Clayoquot Chum (24)	0	0
	Area D Gillnet	Tlupana Chinook (25)	35	4
	Area D Gillnet	Nootka Chum (25)	13,336	0
	Area D Gillnet	Fraser Sockeye (11,12,13,14)	0	0
	Area D Gillnet	JST Chum (12,13)	220,745	3
	Area D Gillnet	MVI Chum (14)	38,193	0
	Area E Gillnet	Fraser Sockeye (29)	0	0
	Area E Gillnet	Fraser Chum (29)	175,906	11
	Area E Gillnet	Nitinat Chum (21, 121)	137,591	0
	Area E Gillnet	MVI Chum (Area 17-19)	283,252	0
Commercial Harvest Total			2,635,335	215
First Nations Commercial	T'aaq-wihak	WCVI ISBM Chinook (25)	0	0
	T'aaq-wihak	WCVI AABM Chinook (24 - 26, 124 - 126)	0	3
	Maa-nulth HA	Henderson Sockeye (23)		
	Harvest Agreement	Fraser River	13,672	0
	EO	Johnstone Strait		
	EO	Strait of Georgia		
	EO	WCVI		
	EO	Fraser River	132,848	1
	Demo	Johnstone Strait		
	Demo	Strait of Georgia	13,090	
Total First Nations EO Catch			159,610	4
Total Commercial Catch			2,794,945	219
Recreational	Sport	Juan de Fuca (19,20)	11	16
	Sport	Strait of Georgia (13-19,28,29)	1,475	37
	Sport	Johnstone Strait (11-12)	555	51
	Sport	WCVI - Inshore (20W-27)	128	6
	Sport	WCVI - Offshore (121-127)	51	0
	Sport	Fraser River		
Total Recreational Catch			2,220	110
First Nations FSC and Treaty		Johnstone Strait	20,494	
		Strait of Georgia	4,622	
		WCVI	2,900	0
		Fraser River	61,739	115
Total First Nations FSC Catch			89,755	115
First Nations ESSR		Johnstone Strait		
		Strait of Georgia	74,784	0
		WCVI	116,226	0
		Fraser River	26,045	0
Total First Nations ESSR Catch			217,055	0
TOTAL - ALL FISHERIES			3,103,975	444

Table 52 - Preliminary 2016 Southern B.C. Commercial Catch Totals by Gear and Area

License Group	Fishing Area	Adult Sockeye Kept	Sockeye Released	Coho Kept	Coho Released	Pink Kept	Pink Released	Chum Kept	Chum Released	Chinook Kept	Chinook Released
Area G Troll*	WCVI AABM Chinook (23-27, 123-127)	0	0	350	3,244	5	1	479	27	55,168	4,771
Area H Troll	Fraser Sockeye (12,13)	0	0	0	0	0	0	0	0	0	0
Area H Troll	Fraser Sockeye (29)	0	0	0	0	0	0	0	0	0	0
Area H Troll	Fraser Sockeye (12, 13, 29)	0	0	0	0	0	0	0	0	0	0
Area H Troll	JST Chum (12,13)	0	3	0	89	0	1	65,010	0	0	77
Area H Troll	Fraser Chum (29)	0	0	0	0	0	0	0	0	0	0
Area H Troll	MVI Chum (14)	0	0	0	0	0	0	0	0	0	0
Area B Seine	Barkley Sockeye (23)	228,329	7	0	80	2	0	0	0	0	451
Area B Seine	Fraser Sockeye (12,13)	0	0	0	0	0	0	0	0	0	0
Area B Seine	Fraser Sockeye (16)	0	0	0	0	0	0	0	0	0	0
Area B Seine	Fraser Sockeye (29)	0	0	0	0	0	0	0	0	0	0
Area B Seine	Mainland Pinks (12, 13, 16)	0	0	0	0	0	0	0	0	0	0
Area B Seine	Howe Sound Pink (26)	0	0	0	1	0	0	0	0	0	0
Area B Seine	Fraser Pink (12, 13, 29)	0	0	0	0	0	0	0	0	0	0
Area B Seine	Nitinat Chum (21, 121)	0	0	0	93	0	0	269,042	0	0	1
Area B Seine	JST Chum (12,13)	0	14	176	454	14	5	1,047,723	0	0	23
Area B Seine	Fraser Chum (29)	0	0	0	0	0	0	472	0	0	0
Area B Seine	MVI Chum (14-19)	0	0	0	149	0	0	383,547	0	0	0
Area D Gillnet	Barkley Sockeye (23)	161,934	0	0	218	0	1	3	1	116	39
Area D Gillnet	Barkley Chum (23)	0	0	0	0	0	0	0	0	0	0
Area D Gillnet	Somass Chinook (23)	0	6	800	0	0	0	1	169	1,555	0
Area D Gillnet	Clayoquot Chum (24)	0	0	0	0	0	0	0	0	0	0
Area D Gillnet	Tlupana Chinook (25)	0	0	0	1	0	0	35	4	3,451	0
Area D Gillnet	Nootka Chum (25)	0	0	0	59	0	0	13,336	0	0	7
Area D Gillnet	Fraser Sockeye (11,12,13,14)	0	0	0	0	0	0	0	0	0	0
Area D Gillnet	JST Chum (12,13)	0	0	0	377	5	11	220,745	3	0	28
Area D Gillnet	MVI Chum (14)	0	0	0	5	0	0	38,193	0	0	0
Area E Gillnet	Fraser Sockeye (29)	0	0	0	0	0	0	0	0	0	0
Area E Gillnet	Fraser Chum (29)	0	0	179	919	0	0	175,906	11	3	49
Area E Gillnet	Nitinat Chum (21, 121)	0	0	0	93	0	0	137,591	0	0	4
Area E Gillnet	MVI Chum (Area 14-19)	0	0	0	131	0	0	283,252	0	0	0
T'aaq-wihak Demo	WCVI AABM Chinook (24-26, 124-126)	0	0	414	417	0	1	0	3	6,049	1,688
T'aaq-wihak Demo	WCVI ISBM Chinook (25)	0	0	0	0	0	0	0	0	317	0
Maa-nulth HA	Henderson Sockeye (23)	1,015	0	0	0	0	0	0	0	0	0
Harvest Agreement	Fraser	0	0	17	6	0	0	13,672	0	2	17
EO	Johnstone Strait	0	0	0	0	0	0	0	0	0	0
EO	Strait of Georgia	0	0	0	0	0	0	0	0	0	0
EO	WCVI	171,617	0	2,764	0	0	0	0	0	10,248	0
EO	Fraser River	0	0	286	414	0	3	132,848	1	4	283
Demo	Johnstone Strait	0	0	0	0	0	0	0	0	0	0
Demo	Strait of Georgia	0	0	0	0	0	0	13,090	0	0	0
Demo	WCVI	0	0	0	0	0	0	0	0	0	0
Demo	Fraser River	0	0	0	0	0	0	0	0	0	0
TOTALS		562,895	30	4,996	6,750	26	23	2,794,945	219	76,913	7,438

*Area G coho harvest estimate is based on the chinook year (Oct 1, 2015 to Sept 30, 2016). Total coho retained includes 107 from 2015 with the remainder in 2016 fisheries.

Table 53. – Preliminary 2016 Southern B.C. Recreational Catch Totals by Area

Fishing Area	Sockeye Kept	Sockeye Released	Coho Kept	Coho Released	Pink Kept	Pink Released	Chum Kept	Chum Released	Chinook ISBM Kept	Chinook ISBM Released	Chinook AABM Kept	Chinook AABM Released
Juan de Fuca (19,20)	7	186	7,581	16,194	154	69	11	16	22,866	23,886		
Strait of Georgia (13-19,28,29)	-	360	8,142	29,525	1,946	1,064	1,475	37	27,440	55,474		
Johnstone Strait (11-12)	61	47	4,449	4,461	2,451	2,066	555	51	8,349	7,146		
WCVI - Inshore (20W-27)	53,647	-	16,132	8,030	96	122	128	6	33,574	37,098	3,557	5,326
WCVI - Offshore (121-127)	25	5	5,692	9,000	36	170	51	-	-	126	34,252	17,186
Fraser River	0	-	8	-	-	-	-	-	1,968	126		
TOTAL	53,740	598	42,004	67,210	4,683	3,491	2,22	110	94,200	123,856	37,809	22,512

All totals are preliminary.

SOG includes a portion of Area 19 (19 GS).

JDF includes a portion of 19 and a portion of Area 20 (20 JDF). WCVI Inshore contains a portion of 20W (West of Sherringham)

*estimates not yet available for some lower Fraser River recreational fisheries

Table 54. – Preliminary 2016 Southern B.C. First Nations (FSC and Treaty) and ESSR Catch Estimates by Area

Fishery type	Fishing Area	Sockeye Kept	Sockeye Released	Coho Kept	Coho Released	Pink Kept	Pink Released	Chum Kept	Chum Released	Chinook ISBM Kept	Chinook ISBM Released	Chinook AABM Kept	Chinook AABM Released
First Nations FSC and Treaty	Johnstone Strait	32,211	0	701	0	2,437	0	20,494	0	347	0	0	0
	Strait of Georgia	660	0	2,048	0	18	0	4,622	0	650	0	0	0
	WCVI	37,352	0	6,699	0	25	0	2,900	0	3,526	0	2,346	0
	Fraser River	103,140	694	2,094	771	1	0	61,739	115	9,639	56	0	0
TOTAL		173,363	694	11,542	771	2,481	0	89,755	115	14,162	56	2,346	0

Fishery type	Fishing Area	Sockeye Kept	Sockeye Released	Coho Kept	Coho Released	Pink Kept	Pink Released	Chum Kept	Chum Released	Chinook ISBM Kept	Chinook ISBM Released	Chinook AABM Kept	Chinook AABM Released
ESSR	Johnstone Strait	0	0	0	0	0	0	0	0	0	0	0	0
	Strait of Georgia	0	0	7,688	0	0	0	74,784	0	3,028	0	0	0
	WCVI	0	0	7,048	0	0	0	116,226	0	37,322	0	0	0
	Fraser River	0	0	23,668	414	0	0	26,045	0	6,712	0	0	0
TOTAL		0	0	38,404	414	0	0	217,055	0	47,062	0	0	0

Table 55. – Preliminary 2016 South Coast Test Fishery Catches

Test-Fisheries	Start Date	End Date	Boat Days	Sockeye kept	Sockeye released	Coho kept	Coho released	Pink kept	Pink released	Chum kept	Chum released	Chinook kept	Chinook released	GRAND TOTAL
Albion Chinook Gillnet	24-Apr-16	20-Oct-16	155	805	0	37	0	0	0	2,349	0	1,219	0	4,410
Albion Chum Gillnet	1-Sep-16	23-Nov-16	53	11	1	209	0	0	0	9,956	0	241	0	10,418
Mquqwin / Brooks Chinook Troll	12-Jul-16	3-Aug-16	14	0	0	91	198	0	0	0	0	354	83	726
Juan De Fuca Chum Seine	27-Sep-16	30-Oct-16	20	0	0	0	174	0	0	1,024	447	0	25	1,670
Area 12 Chum Seine	12-Sep-16	28-Oct-16	66	0	67	0	405	0	43	40,974	131,412	0	41	172,942
Naka Creek Sockeye Gillnet **	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
Area 13 Sockeye Seine **	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
Area 23 Sockeye Seine	6-Jun-16	2-Aug-16	21	10,054	3,698	0	15	0	1	0	2	0	423	14,193
Blinkhorn Sockeye Seine	21-Jul-16	12-Aug-16	22	2,037	4,490	0	143	31	5,341	0	1,244	0	204	13,490
Round Island Sockeye Gillnet *	11-Jul-16	9-Aug-16	30	615	1	241	223	798	3	24	0	22	20	1,947
San Juan Sockeye Seine	22-Jul-16	12-Aug-16	22	1,853	525	0	789	0	16	0	78	0	1,154	4,415
San Juan Sockeye Gillnet	11-Jul-16	3-Aug-16	25	2,055	2	27	27	33	0	11	1	3	83	2,242
Whonnock Gillnet	30-Jun-16	11-Sep-16	72	1,005	22	80	10	0	0	3	0	464	23	1,607
Cottonwood Gillnet	7-Jul-16	23-Aug-16	47	807	24	0	1	0	0	0	0	52	18	902
Qualark Gillnet	1-Jul-16	2-Sep-16	64	1,069	2	3	4	0	0	0	0	315	30	1,423
Grand Total				20,311	8,832	688	1,989	862	5,404	54,341	133,184	2,670	2,104	230,385

* coho given to local First Nations

All test fish catches include assessment and non-assessment sets

** Did not operate in 2016

Note: Jacks included in the above test fishing catches if encountered

D. 2016 UPDATE REPORTS FOR SALMONID ENHANCEMENT PROGRAMS IN THE UNITED STATES AND CANADA

The Pacific Salmon Treaty between Canada and the United States requires that information be exchanged annually regarding operation of and plans for existing enhancement projects, plans for new projects, and views concerning the other country's enhancement projects. In 1988, a committee was formed to develop recommendations for the pre- and post-season and enhancement report formats. In summary, the committee proposed that:

- detailed reports on existing enhancement facilities of the type produced in 1987 be prepared every four years;
- the Parties will annually update information on eggs taken, fry or smolt released and adults back to the facility; significant changes in facility mission or production will be highlighted in narratives; and
- the Parties will provide periodic reports through the appropriate panels on new enhancement plans.

2004 ANNUAL REPORT ON THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2017.

2005 ANNUAL REPORT ON THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2017.

2006 ANNUAL REPORT ON THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2017.

2007 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2017.

2008 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2017.

2009 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2017.

2010 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2017.

2011 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2017.

2012 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2017.

2013 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2017.

2014 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2017.

2015 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2017.

2016 ANNUAL REPORT OF THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2017.

2006 REPORT ON THE SALMONID ENHANCEMENT PROGRAM IN BRITISH COLUMBIA

This report had not been received by March 31, 2017.

2007 REPORT ON THE SALMONID ENHANCEMENT PROGRAM IN BRITISH COLUMBIA

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This report had not been received by March 31, 2017.

2016 REPORT ON THE SALMONID ENHANCEMENT PROGRAM IN BRITISH COLUMBIA

This report had not been received by March 31, 2017.

Reports of the Joint Technical Committees

PART V

REPORTS OF THE JOINT TECHNICAL COMMITTEES

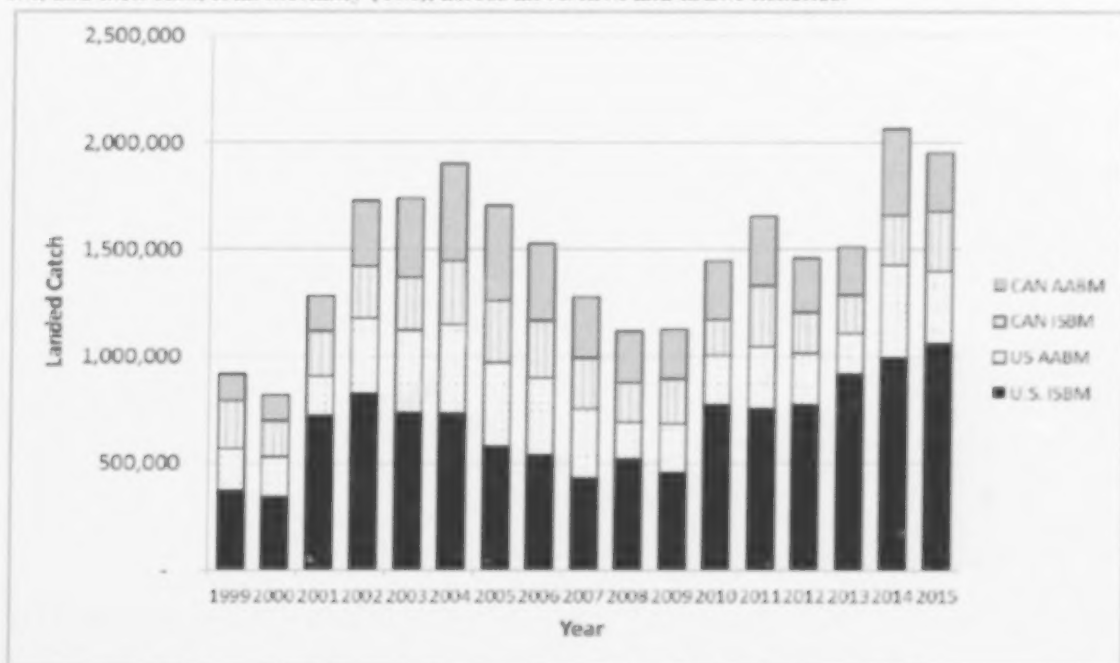
Executive summaries of reports submitted to the Commission by the joint technical committees during the period April 1, 2016 to March 31, 2017 are presented in this section. Copies of the complete reports are available from the library of the Pacific Salmon Commission.

A. JOINT CHINOOK TECHNICAL COMMITTEE

ANNUAL REPORT OF CATCH AND ESCAPEMENT FOR 2015 TCCHINOOK (16)-3 – July 2016

The Pacific Salmon Treaty (PST) requires the Chinook Technical Committee (CTC) to report annual catch and escapement data for Chinook salmon stocks that are managed under the Treaty. The CTC provides an annual report to the Pacific Salmon Commission (PSC) to fulfill this obligation. This report contains three sections: Chinook salmon catches, escapements, and stock status, providing an indication of stock performance in the context of management objectives for 2015.

Section 1 summarizes fishery catches by region and available estimates of incidental mortality (IM) by fishery in 2015, with accompanying commentary on the fisheries, management, and derivation of IM. Annual catch data are compiled by Canada and the US for their respective jurisdictions within the PST area according to fishery regimes, regional locations, and gear type with estimates of IM. Landed catch (LC) is fully reported in the appendices for each geographic area covered under the PST; a summary for all PSC Aggregate Abundance Based Management (AABM) and Individual Stock Based Management (ISBM) fisheries, from 1999 to 2015, is provided in the figure below. Time series of available IM estimates are provided in Appendix A for individual fisheries. Appendix A also includes a coastwide summary of the historical time series of LC, IM, and their sum, total mortality (TM), across all AABM and ISBM fisheries.

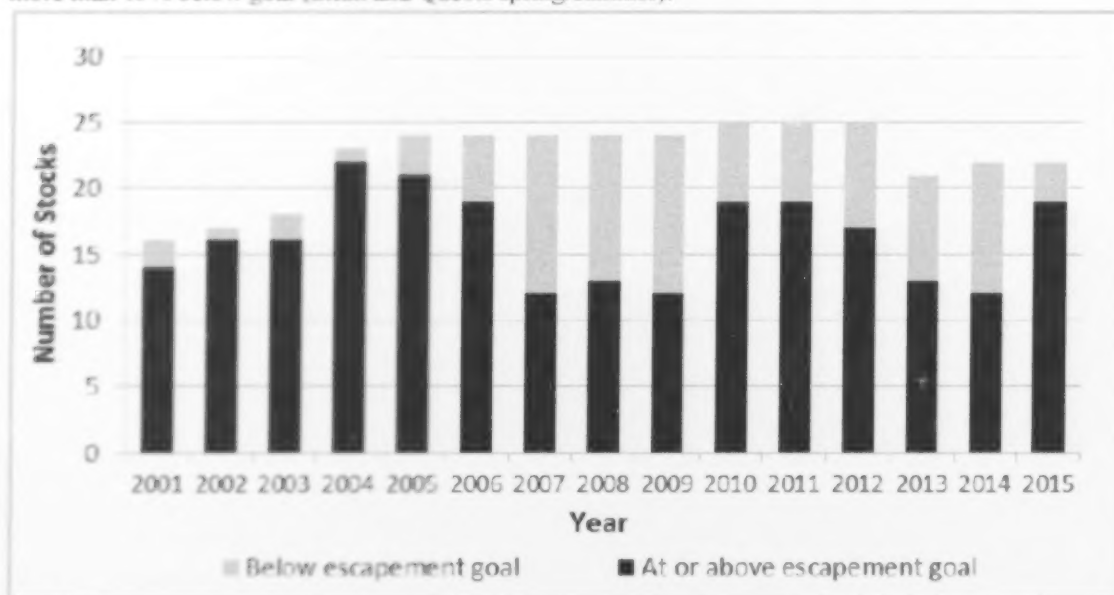


Estimates of landed catch for US and Canada AABM and ISBM fisheries, 1999-2015.

The preliminary estimate of Treaty LC of Chinook salmon for all PST fisheries in 2015 is 1,955,047, of which 1,397,875 were taken in US fisheries and 557,172 were taken in Canadian fisheries. The estimated total IM associated with this harvest is 223,089 nominal Chinook salmon. The TM for all PST fisheries in nominal fish was 2,178,136 Chinook salmon, of which 1,544,669 were taken in US fisheries and 633,468 were taken in Canadian fisheries. For US fisheries, 76% of the LC and 75% of TM occurred in ISBM fisheries; in Canada, 51% of the LC and 51% of TM occurred in ISBM fisheries. For some component sport fisheries, 2015 LC and IM estimates are not yet available.

Section 2 includes an assessment of escapement for PST escapement indicator stocks/stock aggregates with CTC-accepted biologically based goals (22 stocks) as well as escapement data for the other indicator stocks/stock aggregates (24 stocks). For eight of these, the escapement goal is defined as a range; for the remaining 14, the escapement goal is the point estimate of SMSY (escapement producing maximum sustained yield). Annual escapements that are more than 15% below the lower end of the range or the SMSY point estimate are noted. The CTC will continue to review escapement goals for stocks as they are provided by respective agencies.

From 1999 to 2015, the percentage of stocks that met or exceeded escapement goals or goal ranges has varied from 50% to 96% (see figure below). In 2015, 19 of 22 stocks (86%) met or exceeded escapement objectives. Of the three stocks below goal, one stock (Covichan) was within 15% of the target goal. Two stocks were more than 15% below goal (Situk and Queets spring/summer).

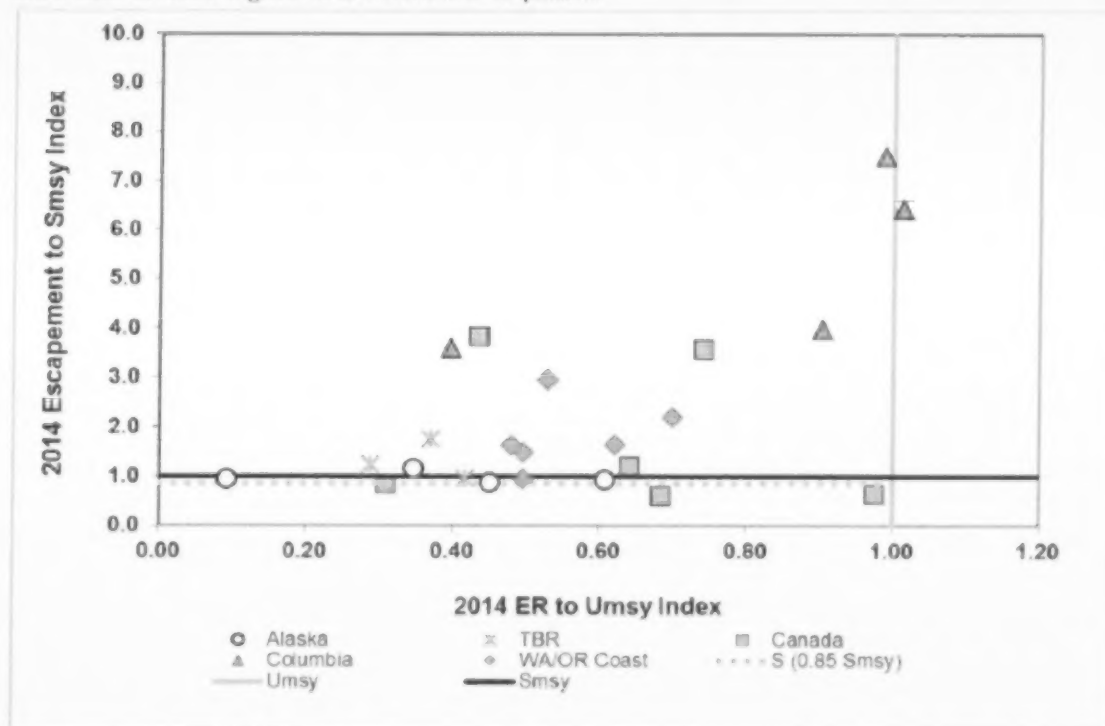


Number and status of stocks with CTC-accepted escapement goals, 1999–2015. The Keta, Blossom, and King Salmon rivers and Andrews Creek stocks were dropped as escapement indicator stocks in 2013 and Grays Harbor fall was added in 2014, bringing the total number of current indicator stocks with CTC-accepted escapement goals to 22 since 2014.

Section 3 presents a synoptic evaluation of stock status that summarizes the performance of those stocks relative to established goals over time for many of the escapement indicator stocks. This evaluation draws upon catch information (Section 1), escapement information (Section 2), and exploitation rates and other information to evaluate the status of stocks.

Synoptic plots present both the current status of stocks and the history of the stocks relative to PST management objectives; this information clearly summarizes the performance of fisheries management

relative to stocks achieving established or potential goals. A synoptic summary figure for 23 stocks with 2014 data shows that the majority of stocks were in the safe zone. No stocks were in the high risk zone and two stocks (Cowichan and Harrison) were in the low escapement and low exploitation zone. Two stocks (Columbia Summers and Columbia Upriver Brights) experienced exploitation near U_{MSY} (exploitation rate at maximum sustainable yield for a stock) and still the escapement exceeded S_{MSY} by 6-fold. The Southeast Alaska, Transboundary River, and Washington and Oregon coastal stocks clustered closer to the 1.0 index lines than the other regional groups. In general, Columbia River stocks showed a higher escapement to S_{MSY} index than the other regions where there was no pattern.



Synoptic summary by region of stock status for stocks with escapement and exploitation rate data in 2014 (escapement and exploitation rate data for each stock was standardized to the stock-specific escapement goal and U_{MSY} reference points).

CHAPTER 3 PERFORMANCE EVALUATION REPORT TCCHINOOK (16)-2 – November 2016

The Commission tasked the CTC with undertaking a review of the performance of the Chinook Chapter in 2014 to enable science-based decision making by the Parties during upcoming negotiations toward a revised Treaty annex. This review is presented in four sections: Stock performance, Fishery performance, Model performance, and Implementation matters.

Chapter 3 of the PST Agreement outlines a coast-wide approach to management of Chinook fisheries that was designed to provide a healthy and productive Chinook resource that imparts sustainable benefits to both Parties through implementation of abundance based fishery regimes that meet maximum sustainable yield (MSY) or other agreed biologically-based escapement and/or harvest rate objectives for stocks originating from Cape Suckling in Alaska south to Humbug Mountain in Oregon.

U.S. and Canadian fisheries that harvest Chinook salmon from Cape Suckling in Alaska south to Cape Falcon in Oregon are classified as either aggregate abundance based management (AABM) fisheries or individual stock based management (ISBM) fisheries.

The Chinook Chapter is complex, including 13 major paragraphs (and many sub-paragraphs), Table 1, two appendices, and five attachments. The Chapter identifies the Parties aspirations for Chinook, lists individual stocks or stock groups with specific management and monitoring measures, identifies several specific funding mechanisms to augment agency programs, and lists extensive duties and assignments to the CTC. The management regime described in Chapter 3 is data intensive, and as such, it is difficult and costly to fully implement. Further, ambiguity in the language contained in Chapter 3 makes interpretation and evaluation challenging.

This report summarizes the performance of stocks, fisheries, and the PSC Chinook Model. The CTC has also examined the degree to which each Party has developed escapement goals, instituted and maintained the stock assessment programs required to support the management regime, and impediments to implementing Chapter 3 as prescribed in the 2009 Agreement. Section 1 describes the task of this report.

Section 2 of this report evaluates the performance of Chinook stocks by examining escapements. Average escapements during the 1999 and 2009 Agreements, changes between these periods, recent brood geometric mean escapements, and agreed PSC objectives (or in a few cases agency objectives) are provided for 63 Chinook stocks or groups of stocks in Table 1. All 4 Southeast Alaska (SEAK) and 3 Transboundary River (TBR) stocks have CTC-accepted objectives, while only 2 of the 29 Canadian stocks and 13 of 27 southern U.S. stocks have CTC-accepted objectives. Of the 22 stocks with CTC-accepted objectives, 4 stocks are herein classified as stocks of concern if either the average escapement from 2009–2015 or the recent geometric mean was below 85% of the goal. These stocks are Situk, Cowichan, Harrison, and Quets spring-summer timed Chinook (see Appendix A for diagnostics for each). 25 escapement indicator stocks had a mean escapement during 2009–2015 that decreased by at least 15% from the 1999–2008 mean, 21 stocks increased by at least 15% and 12 stocks had varied by less than 15%. Table 2 provides additional information for annual escapement performance relative to CTC-accepted goals. The CTC was unable to reach consensus on how to empirically evaluate the status of stocks without CTC-accepted objectives.

Statistics concerning annual rate of change in escapements and in mature run equivalent (MRE) total exploitation rates are presented in Figure 1 and Figure 2, respectively. Escapements increased for more escapement indicator stocks than decreased (Figure 1). MRE rates also increased for more stocks than decreased (Figure 2), indicating that generally, exploitation was increasing for more stocks than decreasing. The distribution of total mortality in AABM fisheries, ISBM fisheries, and escapements are presented for 27 exploitation rate indicator stocks in the 2009 Agreement, along with percent change relative to the 1999 Agreement. For AABM fisheries, average exploitation rates decreased for 20 indicator stocks and increased for 7 indicator stocks. For ISBM fisheries, average mortality distribution percentages decreased on average for 9 indicator stocks, increased for 14 indicator stocks, and did not change for 3 from the 1999 Agreement (Table 3).

Color coded summary statistics for escapement, survival, and fishery impacts for escapement indicator stocks are provided in Table 4. Better quality escapement and exploitation rate data are needed to generate escapement goals and to assess stock performance, particularly in British Columbia and Washington. Evaluation of stock status would be facilitated by development of CTC-accepted biologically-based escapement objectives to better understand the effectiveness of the PST Chinook Regime.

Section 3 of this report reviews the performance of AABM and ISBM fisheries. The total landed catch in PST fisheries averaged 1,400,593 Chinook during the 1999 annex and 1,604,241 during the 2009 annex up to and including 2015, an increase of about 15%. Average U.S. ISBM landed catch increased by approximately 239,000 Chinook (+41%) relative to the 1999 Agreement, while averages for the other three fishery groups all decreased: about 18,000 Chinook (-6%) in the U.S. AABM fishery, about 16,000 Chinook

(-7%) in the Canadian ISBM fisheries and about 1,000 Chinook (<-1%) in Canadian AABM fisheries. During the 1999 annex, the U.S. ISBM averaged 42%, the Canadian ISBM averaged 17%, the U.S. AABM averaged 21%, and the two Canadian AABM fisheries averaged 20% of the total annual PST catch. During the first seven years of the 2009 Agreement, percentages of the total PST landed catch averaged 51% in the U.S. ISBM (9% increase relative to the 1999 Agreement), 14% in the Canadian ISBM (4% decrease), 17% in the U.S. AABM (4% decrease) and 18% in the Canadian AABM (2% decrease) (Figure 3).

The PST Chinook model performs poorly in terms of providing preseason ISBM indices (Figure 4 and Figure 5), so poorly that agencies cannot rely upon those metrics when planning ISBM fisheries preseason. The considerable efforts invested by the CTC on investigations of AABM indices have partly precluded in-depth investigations of preseason ISBM indices. For example, it is unclear to what extent the performance of the Chinook Model ISBM indices are a consequence of insufficient attention to calibration settings. Improvements to the PSC Chinook Model are necessary to generate more useful preseason ISBM fishery indices, such as finer spatial-temporal fishery stratification, representation of MSFs, and finer scale stock representation. The CTC is working on several improvements to the model to improve the representation of stocks, fisheries, and Chinook population dynamics. Better quality input data (e.g. escapement by age, forecasts of escapement or terminal run) are needed for the large stocks to improve model performance. Attachments IV and V of Chapter 3 identify stocks to be monitored for ISBM performance. Evaluations were not possible for many of the stocks in Attachments IV and V because they were not represented by a CWT indicator stock or they did not have base period exploitation rates to calculate the ISBM index. As Table 5 and Table 6 show, a CWT-based ISBM index cannot be calculated for 40% of the Canadian stocks and 25% of the U.S. stocks. In the case of several Canadian Attachment IV stocks, the ISBM statistic is not stock specific, but rather a rate for a single stock is widely applied to other stocks, even though terminal fisheries may vary among them. Of the 41 listed stocks, 17 could not have ISBM indices generated in any year, and six of the stocks could not have ISBM indices generated in all the years. Southern U.S. ISBM indices are not available until two years after the fishery which substantially reduces the responsiveness and effectiveness of ISBM provisions. Further, the CWT data necessary to compute postseason CWT-based ISBM indices become available with a 2-year lag for U.S. stocks and 1-year lag for Canadian stocks. This inability to specifically monitor performance for many Attachment stocks is another challenge to fully implementing the provisions of Chapter 3. Since 2009, the obligations for the Canadian ISBM fisheries were met for all stocks except WCVI (2 years), whereas for U.S. fisheries the ISBM obligations were met for all stocks except Nooksack spring (4 years), Grays Harbor fall (4 years), Queets fall (1 year), Deschutes (1 year), Nehalem (1 year) and Siletz (1 year). Figure 6 and Figure 7 illustrate Canadian and U.S. ISBM performance with respect to PST obligations.

The PST Chinook model has been used to determine preseason catch targets and post-season allowable catch limits for AABM fisheries since the start of the abundance-based management regime in 1999 (Table 7). Tables 8 to 10 (and Figures 8-10) show management and model errors. Average management error was 7% (range -1% to 43%) for SEAK during the 2009 Agreement while model error ranged from -38% to +30%. Deviation of the actual catch in SEAK from post-season allowable catch was largely driven by model error. SEAK management error was relatively small in all years other than 2015 and was in the opposite direction of the model error in 5 of the 7 years from 2009–2015. Since 2009, the SEAK AABM fishery exceeded the post-season limit in 6 of the 7 years with the cumulative overage being about 75,000 Chinook. Average management error was -20% (range -1% to -33%) for NBC during the 2009 annex while model error ranged from -35% to 16%. Management errors in NBC were the result of Canada's domestic efforts to reduce impacts on WCVI Chinook. Management actions in NBC outweigh model errors in most years. Since 2009, the NBC AABM fishery has never exceeded the post-season limit and the cumulative underage is about 385,000 Chinook. Average management error was -1% (range -8% to 16%) for WCVI during the 2009 annex while model error ranged from -36% to 40%. Deviation of the actual catch in WCVI from post-season allowable catch was driven by model error. The WCVI management error and model error were in a common direction in 5 of 7 years from 2009–2013 and only in opposite directions in 2010 and 2014 when both model and management errors were small. Since 2009, the WCVI AABM fishery exceeded the post-season limit in 3 of the 7 years with the cumulative underage being

about 11,000 Chinook. Relative to the 1999 Agreement, the 2009 Agreement called for 15% and 30% reduction of catches in the SEAK and WCVI AABM fisheries, respectively. From 2009–2015, average realized reductions were 10% in the SEAK AABM fishery and 27% in the WCVI AABM fishery.

The Commission requested the CTC to compare expected impacts of the 1999 versus the 2009 AABM fishery regimes through a “what if” simulation analysis. The CTC employed two sets of PSC Chinook Model simulation runs to produce a set of statistics that were used to compare stock performance and expected impacts under two scenarios: (1) expected results had the provisions of the 1999 Agreement been continued through 2015 and (2) expected results of the 1999 Agreement through 2008 and provisions of the 2009 Agreement beginning in 2009. The simulation indicated that implementation of the 2009 Agreement provisions beginning in 2009 resulted in a projected decrease of 11% in AABM catches, a projected increase of 2% in ISBM catches, and an increase in escapements that averaged 3% yearly. The projected increase in escapements ranged from 1.5% to 9.0%.

Section 4 of this report assesses the performance of the PSC Chinook Model and the model inputs. The PSC Chinook Model was originally constructed as a tool to evaluate the effect of fishery management actions on the rebuilding of depressed Chinook salmon stocks coast-wide. Since the 1999 annex, the model has been used to enable abundance-based management in the PST through the production of AABM fishery abundance indices and ISBM indices. The three AABM fishery regime relationships relate fishery specific catch and fishery indices to AIs using a proportionality constant that varies annually but is assumed constant based on the 1979 to 1997 average harvest rates and the assumption that stock distribution and fishing patterns remain relatively stable.

Table 14 provides information on forecast origins, and the bias and error of forecasts used as inputs to the Chinook model. For AABM fishery planning, the error in the preseason AI generated by the model was the largest source of error for implementation of the AABM fisheries since 2009. Generally, the preseason AIs exceeded the post season AIs, except in 2013 and 2015. Of the six stocks with solely model-produced forecasts, 3 (50%) had a mean percent error that was less than the 7.5% bias guideline recommended by the CTC in 2013 for implementation of Paragraph 13. Of the 17 stocks with solely agency-provided forecasts summarized in Table 14, only six (35%) met that same performance criterion. None of the four stocks that use a combination of agency and model forecasts met this performance guideline. Of seven stocks that contribute 10% or more to at least one of the AABM fisheries, forecasts for five stocks (Northern BC, Fraser Late, Bonneville and Cowlitz Hatcheries, Upriver Brights, and Oregon Coast) had a mean percent error less than the 7.5% guideline and two did not (WCVI Natural and Hatchery and Puget Sound Fingerlings). Differences in forecast performance between the two Agreement periods occurred to some extent for all stocks with a few changes being more notable than others. For example, the Model-produced Lower Georgia Strait Natural and Upper Georgia Strait forecasts has increased in tendency to over-forecast the spawning escapements. The Commission has initiated an independent scientific review panel with the intent to provide additional insight into forecast performance and will make recommendations to the Commission prior to 2017.

Section 5 of this report discusses the successes and challenges associated with implementing the 2009 Agreement. The Chapter 3 management regime is data intensive, and requires that substantial fiscal resources be invested and coordinated across jurisdictions to provide data on catches, incidental mortality, and escapements as well as maintenance of a quality CWT system. During the negotiations, the Parties recognized that fiscal resources greater than those available at the time were required for implementing Chapter 3. In response, the Parties included additional funding to improve escapement assessments in specific regions, the CWT system, and the PSC Chinook Model. These additional resources totaled approximately \$26 million over five years in order to augment annual expenditures of approximately \$5 million. Information on progress for these specific items is included in Section 5.4 of this report.

The availability and quality of data used for the coast-wide Chinook indicator stock program is evaluated in Section 5.2. The CTC defined 11 attributes of the indicator stock program and three data quality levels for

each of these attributes during the current annex period (Table 15). The CTC scored these attributes for each indicator stock against data quality criteria as a means of evaluating the efficacy of indicator stocks used to monitor stock status of Chinook (Table 16). The evaluation demonstrates that the information currently available ranges from high quality information available for some stocks to poor quality and/or a lack of quantitative information available for many others. Specific data needs are highlighted under regional headings.

At the conclusion of the negotiations for the 1999 Agreement, the lead Canadian and U.S. negotiators wrote a memorandum, dated 23 June 1999, to the Honorable Lloyd Axworthy, Honorable David Anderson, and Secretary of State Madame Albright stating:

"The Agreement represents a commitment to abundance-based management for the salmon fisheries covered by the Treaty. This important, new conservation-based approach will require adequate resources by each Party to ensure that the necessary scientific and management needs are met. In particular, the coastwide Chinook Chapter (Annex IV, Chapter 3) which represents a departure from previous Annexes, is dependent upon high quality fishery and stock assessment data being collected by management agencies coupled with time-consuming analysis of the data by the Chinook Technical Committee. Management agencies are urged to provide adequate resources, both staff and time, to the Chinook Technical Committee for successful implementation."

The CTC encountered numerous information gaps and issues with data quality during the development of this report which prevented a comprehensive, certain assessment of stocks and evaluation of fisheries within the jurisdiction of the PSC. A large increase in funding for agencies is required to ensure data of appropriate quality can be provided for implementation of Chapter 3. The CTC recommends that the Parties fully fund the stock and fishery data collection programs that are necessary to implement the abundance-based management regime, as identified in the aforementioned letter of transmittal. The Commission cannot meet the goal of providing for a healthy and productive Chinook resource without adequate and timely stock assessments implemented by management agencies.

Section 5.3 identifies that there are only 22 CTC-accepted escapement goals in place 17 years after implementation of the abundance-based regime that is dependent upon having goals for performance monitoring. A scientifically-based management regime cannot be expected to be fully evaluated when less than half of the identified stocks have biologically-based escapement (or harvest rate) objectives. Section 5.3.1 identifies concerns with Attachments I to V of the Agreement. Implementation of precautionary management actions defined in paragraph 13 is also hampered by the lack of stock-specific objectives, and by an overly complex implementation scheme.

The 2009 Agreement includes a series of technical assignments to the CTC. While many tasks have been completed, many others are only partially complete or are on hold due to the need for policy clarification, or have not yet been started (Table 18). The quantity and complexity of assignments has placed an unrealistic work load on the CTC, and many are intertwined with policy related issues that the Commission, to date has not resolved. Section 5.5 identifies the CTC's concern about the eroding capacity of agencies to fully implement Chapter 3 of the Agreement. Fiscal pressures have already, and continue to erode the capacity of management agencies in both the U.S. and Canada to provide the basic data and other vital information for implementation of the current PSC fishing regime. In response to austerity demands, agencies are increasingly turning to Northern and Southern Endowment Funds to conduct work that would previously have been considered core stock and fishery management and assessment programs. In addition, the CTC is increasingly concerned that due to staff and other fiscal limitations, the CTC is not able to meet the expectations of the Commission with regard to completing assignments, due to the extensive work load versus time and funding limitations that are imposed through the agencies. Succession planning in the CTC is needed in order to provide continuing capacity to implement and evaluate the requirements of Chapter 3.

The stocks in Attachments I-V need review as many stocks are not monitored for escapement or monitored inadequately, do not have escapement objectives, or do not have a representative CWT indicator stock to calculate ISBM indices and impacts in AABM fisheries. Deficiencies in many of the stock assessment and fishery evaluation programs make parts of Chapter 3 impractical for the majority of stocks and consequently few of the components of Chapter 3 were implemented fully during the 2009 Agreement.

Lastly, Section 5.6 discusses the current adequacy of computer models, tools, and assumptions that are used for implementation of Chapter 3 and identifies specific areas in need of improvement.

B. JOINT CHUM TECHNICAL COMMITTEE

2013 POST SEASON SUMMARY REPORT TCCHUM (16)-1 – May 2016

This Pacific Salmon Commission (PSC) Joint Chum Technical Committee report presents the information on Chum salmon stocks and fisheries in southern British Columbia (B.C.) and Washington (WA) for the year 2013 to address the specific provisions and requirements of Chapter 6, Annex IV (Chum Annex) of the Pacific Salmon Treaty (PST or Treaty) (Appendix A). The Treaty between the governments of Canada and the United States of America (U.S.) concerning Pacific salmon is designed to facilitate co-operation in the management, research and enhancement of Pacific salmon stocks. The Chum Annex requires that Canada and the U.S. maintain a Joint Chum Technical Committee reporting to the Southern Panel and the Commission and that certain fisheries for Chum salmon in southern B.C. and WA be managed in a specified manner (Appendix A). Certain fisheries of each country, while not specifically mentioned in the PST, are known to harvest Chum salmon originating in the other country.

This report presents various aspects of Chum salmon found in B.C. waters between Vancouver Island and the mainland, off the west coast of Vancouver Island, and in WA waters. This report also discusses the management actions of Canada and the U.S. in relation to the PST requirements for Chum salmon and provides a summary of the last 10 years of catch and escapement information for Chum salmon of concern to the Treaty. Returns in 2013 were slightly below the recent 9-yr average in B.C. to slightly above this average in WA. The Chum Technical Committee continued work on components of the strategic plan outlined in the 2010 report, which included collecting and exchanging tissue samples from mixed-stock fisheries and spawning escapements, conducting genetic sampling workshops in US and Canada, as well as initiating development of a run reconstruction model.

C. JOINT COHO TECHNICAL COMMITTEE

No reports were finalized for publication during this reporting period.

D. JOINT NORTHERN BOUNDARY TECHNICAL COMMITTEE

U.S./CANADA NORTHERN BOUNDARY AREA 2016 SALMON FISHERIES MANAGEMENT REPORT AND 2017 PRELIMINARY EXPECTATIONS TCNB (17)-1 – March 2017

This report reviews:

- 1) catch, effort, and management actions in the 2016 Northern Boundary Area troll and net fisheries of southern Southeast Alaska Districts 101 to 108 and northern British Columbia Areas 1, 3, 4, and 5;
- 2) management performance relative to Pacific Salmon Treaty requirements for sockeye and pink salmon;
- 3) preliminary expectations and fishing plans for 2017.

2016 Fisheries

Pink salmon returns were average to strong throughout southern Southeast Alaska, but were below average through much of northern Southeast Alaska inside waters. The southern Southeast Alaska pink salmon harvest was 16.3 million (Districts 101-108, all harvest codes, all gear), which was 75% of the recent ten-year average. For all of Southeast Alaska, excluding the Yakutat area, the pink salmon harvest was 18.4 million fish, which was well below the preseason forecast point estimate of 34 million, but within the 13-55 million 80% confidence interval range of the forecast.

The total 2016 Southeast Alaska pink salmon escapement index of 10.1 million index fish ranked 27th since 1960. Biological escapement goals are in place for three subregions in Southeast Alaska and goals were met in the Southern Southeast and Northern Southeast Outside subregions, but escapements were below goal in the Northern Southeast Inside Subregion. On a finer scale, escapements met or exceeded management targets for 8 of 15 districts in the region and for 30 of the 46 pink salmon stock groups in Southeast Alaska. The Southern Southeast Subregion includes all of the area from Sumner Strait south to Dixon Entrance (Districts 101-108). The escapement index value of 6.6 million was within the escapement goal range of 3.0 to 8.0 million index fish. The pink salmon harvest of 16.3 million in the Southern Southeast Subregion was 75% of the recent 10-year average. The overall Southeast Alaska pink salmon harvest of 18.4 million fish was approximately 50% of the 2006-2015 average of 38.1 million.

Sockeye salmon harvests in the Alaska boundary area were near or above the 1985-2015 average in the District 101 and 102 traditional purse seine fisheries, and below average in the District 103 and 104 purse seine and District 101 drift gillnet fisheries. The Hugh Smith Lake adult sockeye salmon escapement was 12,900, which was within the optimal escapement goal range of 8,000 to 18,000 adult sockeye salmon. Based on the expanded peak foot survey count, the escapement of sockeye salmon into McDonald Lake was estimated to be 15,600 fish, which was far below the sustainable escapement goal range of 55,000 to 120,000.

Summer chum salmon harvests in the Alaska boundary area were near or above the 1985-2015 average in the District 101, 102, and 104 traditional purse seine fisheries, and below average in the District 103 purse seine and District 101 drift gillnet fisheries. The Southern Southeast chum salmon stock group is composed of an aggregate of 15 summer-run chum salmon streams on the inner islands and mainland of southern Southeast Alaska, from Sumner Strait south to Dixon entrance, with a sustainable escapement goal of 62,000 index spawners (based on the aggregate peak survey to all 15 streams). Summer chum salmon escapements were above average at most index streams in southern Southeast Alaska, and the index of 90,000 in 2015 was well above goal.

Coho salmon harvests in the Alaska boundary area were near or below average in gillnet and purse seine fisheries, with the exception of District 2 purse seine, which was 128% of average. Coho salmon escapement counts and estimates were within or above goal ranges. The combined peak count of 13,420 coho salmon in the 14 surveyed streams in the Ketchikan survey index was above the escapement goal of 4,250–8,500 fish. The total escapement of 978 coho salmon to Hugh Smith Lake was within the biological escapement goal range of 500–1,600 fish.

In Canadian Area 1, there are no longer commercial net interception fisheries on passing salmon stocks. Area 1 pinks experienced a strong brood return in 2014, with a terminal harvest of approximately 600,000 fish and an estimated escapement of over 1 million. Returns from the 2014 brood were very poor, leading to no harvestable surpluses being identified. In addition, no chum salmon surpluses were identified in-season. As such, no terminal chum-directed gillnet or seine fisheries occurred in 2016. Catches in the Area 1/101 troll fishery were above the previous decadal average for coho salmon and below the decadal average for pink salmon.

The Area 3 commercial net fishery anticipated a harvestable surplus of 250,000 Nass sockeye salmon, along with seine opportunities to harvest surpluses associated with an expected above average pink salmon return. With the continued increasing trend in earlier timed Area 3/Nass coho salmon abundance, coho retention was again permitted throughout the fishing season, along with a coho directed troll fishery. Specific measures continue to be in place to rebuild local wild chum and Chinook salmon populations, including time and area closures and retention restrictions.

Sockeye salmon catches were poor from the beginning of the season in Area 3, with CPUEs well below average. Catches of sockeye at the Nass Fishwheels indicated that the Nass sockeye return was much poorer than the pre-season prediction, and was likely to be below the minimum escapement requirement. As such, retention of sockeye by the net fleet was restricted after July 4 for the remainder of the season. Gillnets last fished Area 3 on July 4, while seines continued fishing for pink salmon with a non-possession/non-retention restriction in place. The gillnet fleet harvested 19,508 sockeye in 2016, while seines delivered only 495 sockeye. Pink salmon catches were well above average in Area 3 for seines, with a total harvest of 892,858 pinks, compared to the previous even-year decadal average of 275,000. Due to the early closure of gillnets to protect weak Nass sockeye, the harvest pinks by gillnets was minimal at 6,271 fish.

There were two commercial gillnet openings targeting Skeena Chinook salmon in 2016, with total fishing time of 48 hours and total catch of 392 pieces. The Area 4 net fishery was planned in anticipation of a commercial sockeye salmon surplus of 100,000 and a below average pink salmon return. Due to better than anticipated in-season total return projection of sockeye, a total of 7 openings directed at Skeena sockeye were permitted for the gillnet fleet, between July 8 and August 9. Seine opportunities for Skeena sockeye were limited to an Individual Transferable Quota fishery between August 11 and 15. Retention of pinks and coho was permitted for both fleets, with non-possession/non-retention of chum, Chinook and steelhead. The total gillnet sockeye salmon harvest of 107,406 was well below the 2005–2015 average of 243,338 pieces. The gillnet fleet also retained 10,707 coho and 70,633 pink salmon during the 2016 Area 4 fishery. The final catch for the seine fleet was 23,548 sockeye, 5,229 coho and 15,264 pink salmon. Sockeye and pink catches were well below the 2006–2015 average for gillnets and seines, while coho catches were above the 10-year average.

Area 5 did not open to commercial seine fishing in 2016 due to lack of identified harvestable pink salmon surpluses, though gillnets fished 4 days in conjunction with Area 4 gillnet openings targeting surplus Skeena sockeye.

The preliminary sockeye salmon net escapement estimate of 277,484 to the Nass exceeded the escapement target of 200,000 and is above the 2006–2015 average of 244,863. The preliminary Skeena sockeye salmon net escapement estimate of 1.25 million was much higher than the 2006 to 2015 average of 973,369, and well above the target escapement of 900,000. Pink salmon returns throughout the North Coast were much lower

than expected, based on brood year strength, and it is likely that escapement goals were not met in most cases. As was the case in 2015, early-returning stocks returning to the Nass and Skeena fared much better than later-timed and coastal populations. Some Areas 4 coastal and lower Skeena tributary systems experienced complete failures. Chum salmon escapements in Area 4 have been improving with the added protection provided by management actions, though remain below escapement targets. Escapements to Area 3 continue to improve with management measures in place to reduce impacts to wild chum continued in 2016 as part of the north coast chum rebuilding program.

Management Performance

Pacific Salmon Treaty based harvest sharing agreements were renewed in 2009 for the Northern Boundary area fisheries—Alaska District 104 purse seine, Alaska District 101 drift gillnet, Canadian Area 3 net, and Canadian Area 1 troll. The agreements are “abundance based” where the allowable harvest is a percentage of the Annual Allowable Harvest (AAH). The AAH is the total return of applicable stocks minus the lesser of: 1) the actual escapement, or 2) the escapement goal. Catches over or under the AAH are summed over the period of the agreement to allow for annual variation.

In Alaska’s District 104 purse seine fishery, the Nass and Skeena sockeye salmon run size determines the AAH of these stocks prior to Statistical Week 31. In Alaska’s District 101 gillnet fishery, the AAH is based solely on the run size of Nass River sockeye salmon. The run size of Alaskan pink salmon returning to Districts 101-103 determines the allowable harvests of these stocks in Canada’s Area 3 (1-4) net and Area 1 troll fisheries.

The agreement specifies a harvest in the District 104 purse seine fishery, from the beginning of the season through Statistical Week 30, of 2.45% of the combined AAH of both the Nass and Skeena River sockeye salmon runs. The fishery opens the first Sunday in July and in 2016 the initial opening was July 3 (Week 28). The 2016 pre-Week 31 fishing plan for District 104 was based on returns of local Alaskan stocks as well as the Canadian Department of Fisheries and Oceans (DFO) preseason forecast returns of approximately 1,959,000 Nass and Skeena sockeye salmon. The preseason forecasts of Nass and Skeena sockeye salmon minus an escapement goal of 1.10 million, produced an AAH of approximately 859,000 fish. Using this forecast, the 2016 pre-week 31 AAH was approximately 21,000 Nass and Skeena sockeye salmon in the District 104 purse seine fishery.

In the 2016 Treaty period (Alaska statistical weeks 28-30), 110,346 sockeye were harvested during a 15 and 12-hour opening in Week 28; a 15 and 12-hour opening in Week 29, and one 6-hour opening in week 30 (Table 1). The preliminary estimates of Nass and Skeena sockeye salmon harvested prior to week 31 in the District 104 purse seine fishery was 65,039 fish in 2016. The final number of Nass and Skeena sockeye salmon harvested, and the actual harvest by sock, will not be available until harvest, escapement, and stock composition estimates are finalized for the year.

In the District 101 (Tree Point) drift gillnet fishery, the AAH is calculated as the total run of Nass sockeye salmon minus either the escapement requirement of 200,000 or the actual in-river escapement, whichever is less. The agreement specifies a harvest of 13.8 percent of the AAH of the Nass River sockeye salmon run. The return of Nass sockeye salmon was forecast at 679,000 in 2016 which, minus an escapement goal of 200,000, would result in an AAH of about 479,000. Using this forecast, the 2016 allowable harvest in the District 101 drift gillnet fishery was approximately 66,102 Nass River sockeye salmon. A total of 39,912 sockeye salmon were harvested, which was only 33% of the 1985-2015 average of 119,957 fish and was the third lowest harvest since the inception of the Pacific Salmon Treaty. The preliminary estimate of Nass River sockeye salmon harvested in the District 101 drift gillnet fishery in 2016 was 14,388 fish.

The District 101 drift gillnet fishery opens by regulation on the third Sunday in June, which was June 19 (week 26) in 2016. During the early weeks of the fishery, management is based on the run strength of Alaska wild stock chum and sockeye salmon and on the strength of the Nass River sockeye salmon. Beginning in the

third week of July, when pink salmon stocks begin to enter the fishery in large numbers, management emphasis shifts by regulation to that species. By regulation, the District 101 Pink Salmon Management Plan sets gillnet fishing time in this district in relation to the District 101 purse seine fishing time when both fleets are concurrently harvesting the same pink salmon stocks.

For 2016, Canada was to manage the Area 3-1 to 3-4 net fisheries to achieve an annual catch share of 2.49% of the AAH of Alaskan Districts 101, 102 and 103 pink salmon. With a total return of approximately 30.54 million pinks, the Alaskan Districts 101, 102 and 103 AAH was approximately 19.79 million pinks. The resulting Area 3-1 to 3-4 Canadian commercial net total allowable catch of this AAH was approximately 491,666 pinks of Alaskan Districts 101, 102 and 103 origin.

In the Canadian northern boundary area, pink salmon returns were anticipated to be average to below average for Area 3 and Area 4, based on brood year return strength. Actual returns to Area 3 were below average and well below average for Area 4. The 2016 preliminary Canadian pink salmon catch in Sub-areas 3-1 to 3-4 was 430,435, and the Alaska stock component of this catch is estimated to be 393,118, or 2.0 % of the AAH. This result is below the annex agreement of 2.49%.

Also in 2016, Canada was to manage the Area 1 troll fishery to achieve an annual catch share of 2.57% of the AAH of Alaskan Districts 101, 102 and 103 pink salmon. With a Total Return of 30.54 million pinks, the resulting Area 1 Canadian commercial troll total allowable catch of this AAH was approximately 406,801 pinks of Alaskan Districts 101, 102 and 103 origin.

The Canadian commercial troll fishery targeting pink salmon was open in the northern portion of Area 1 (Dixon Entrance AB Line) from July 1 to September 30. Pink retention was also permitted during the Chinook-directed fishery in parts of Area 1, which was open from June 18 to July 31 and from August 25 to September 30. Effort directed at pink salmon in Area 1 was minimal in 2016, with pinks being harvested as by-catch in fisheries directed at coho and Chinook. The fishery harvested a total of 32,343 pink salmon, with an estimated 30,953 being of Alaskan origin. This equates to 0.16% of the Alaskan Districts 101, 102 and 103 pink AAH, well below the annex agreement of 2.57%.

2017 Forecasts

The Southeast Alaska pink salmon harvest in 2017 is predicted to be in the strong range, with a point estimate of 43 million fish (80% confidence interval: 27–59 million fish). An actual harvest of 43 million pink salmon would be just above the recent 10-year average harvest of 39 million pink salmon. The 2017 forecast was produced in two steps: 1) a forecast of the trend in the harvest, and 2) the forecast trend adjusted using 2016 juvenile pink salmon abundance data provided by the NOAA Fisheries, Alaska Fisheries Science Center, Auke Bay Laboratories. Formal forecasts are not made for species other than pink salmon in Southeast Alaska.

A below average Nass River sockeye salmon total return of 454,000 (with a 10% probability of the return exceeding 505,000 and a 90% probability the return will exceed 408,000) is expected. The sibling model forecast predicts a 50% probability of approximately 594,000 sockeye salmon returning to the Skeena River in 2017 with a 10% probability of a return exceeding 1.24 million and a 90% probability the return would exceed 285,000. Below average pink salmon returns are anticipated to Areas 3, 4 and 5, based on brood year escapements, while Area 1 pinks will experience an off-year.

E. JOINT TRANSBOUNDARY TECHNICAL COMMITTEE

SALMON MANAGEMENT AND ENHANCEMENT PLANS FOR THE STIKINE, TAKU, AND ELSEK RIVERS, 2016

TCTR (16)-1 – June 2016

Management of transboundary river salmon to achieve conservation, allocation and enhancement objectives, as stipulated by the Pacific Salmon Treaty (PST), requires a cooperative approach by Canada and the United States. It is important that both Parties have a clear understanding of the objectives and agree upon procedures to be used in managing the fisheries, including the criteria upon which modifications of fishing patterns will be based. This document is intended to facilitate cooperative salmon management, stock assessment, research and enhancement on transboundary stocks of the Stikine, Taku, and Alsek rivers conducted by the Canadian Department of Fisheries and Oceans (DFO), the Tahltan and Iskut First Nations (TIFN), the Taku River Tlingit First Nation (TRTFN), the Champagne & Aishihik First Nation (CAFN), and the Alaska Department of Fish and Game (ADF&G).

This report contains, by river system and species, the 2016 salmon run outlooks, spawning escapement goals, a summary of harvest sharing objectives, and an outline of management procedures to be used during the 2016 fisheries. Numerical forecasts are presented for: Stikine River sockeye and large Chinook salmon and Taku River large Chinook salmon as required by the PST; Taku sockeye and coho salmon; and Alsek sockeye and Chinook salmon. Outlooks for other stocks are given qualitatively with reference to brood year escapement data where available. This report also contains joint plans for fry stocks and egg collections and a detailed list of proposed field projects for 2016, identifying agency responsibility and contacts for the various functions within the projects.

FINAL ESTIMATES OF TRANSBOUNDARY RIVER SALMON PRODUCTION, HARVEST AND ESCAPEMENT AND A REVIEW OF JOINT ENHANCEMENT ACTIVITIES IN 2014

TCTR (17)-1 – January 2017

Final estimates of harvests and escapements of Pacific salmon returning to the transboundary Stikine, Taku, and Alsek rivers for 2014 are presented and compared with historical patterns. Average, unless defined otherwise, refers to the most recent 10-year average (2004–2013). Relevant information pertaining to the management of appropriate U.S. and Canadian fisheries is presented and the use of inseason management models is discussed. Preliminary results from TBR sockeye salmon *Oncorhynchus nerka* enhancement projects are also reviewed.

Stikine River

In May 2014, a landslide occurred near the mouth of the Tahltan River. The landslide deposited approximately 8,000 m³ of debris into the river which blocked access to Tahltan River Chinook and sockeye salmon spawning sites until mid-July. In mid-July, Tahltan River flows dropped to a moderate to low flow regime which allowed fish passage around the landslide debris. Canadian estimates indicate that as many as 70% of Tahltan River Chinook salmon and 9% of Tahltan sockeye salmon may have failed to access their traditional spawning grounds due to the landslide.

The estimated 2014 Stikine River sockeye salmon run was 153,300 fish, of which approximately 67,900 fish were harvested in various fisheries including test fisheries. An estimated 81,900 Stikine River fish escaped to spawn, including 21,000 fish that migrated to the barrier in the Tuya River that were not harvested. The run was 41,800 fish below average and the harvest was 60,600 fish below average. The Tahltan Lake sockeye salmon total escapement of 39,800 fish was above the goal range (18,000 to 30,000 fish). The estimated U.S. commercial harvest of Stikine River sockeye salmon in Districts 106 and 108, including the Stikine River subsistence fishery, was 23,900 fish. The sockeye salmon harvest in the Canadian inriver commercial was

30,500 fish and the AF harvest was 10,000 fish. The inriver test fisheries (Inriver and Tuya) harvested 2,700 sockeye salmon. Weekly inseason run projections from the SMM ranged from 226,900 to 261,400 sockeye salmon; the final inseason model prediction was 226,900 fish, with a TAC of 163,900 fish. Weekly inseason run projections using other methods in concert with the SMM ranged from 190,800 to 269,100 sockeye salmon; the final inseason run size based on this approach was 234,500 sockeye salmon with a TAC of 170,440 fish. Based on the final postseason run size estimate (153,500) and TAC estimate of 42,600 Stikine River fish for each country, Canada harvested 96% and the U.S. harvested 56% of their respective TACs. Broodstock collection removed 2,900 sockeye salmon from the escapement to Tahltan Lake leaving a natural spawning escapement of 36,900 fish. The estimated spawning escapement of 21,000 mainstem Stikine River sockeye salmon was within the goal range of 20,000 to 40,000 fish for this stock group.

The estimated 2014 Stikine River large Chinook salmon terminal run was 29,300 fish; above border run was 27,700 fish and spawning escapement was 24,400 fish. The run and harvest were below their respective averages. The Little Tahltan River large Chinook salmon escapement of 169 fish was below the Canadian escapement target of 3,300 fish and below the lower bound of the Canadian target range of 2,700 to 5,300 fish. The Canadian estimate of Little Tahltan large Chinook salmon that did not pass the landslide was 347 fish. The estimated U.S. commercial harvest of Stikine River Chinook salmon in Districts 108 gillnet, test, troll, subsistence, and sport fisheries was 1,600 fish. The estimated Canadian commercial, Aboriginal, assessment/test, and sport fisheries harvest was 3,300 fish. Managers used harvest in the MR, model, and other assessment estimates to generate inseason run sizes after SW 24. The inseason run projections were consistent throughout the course of the fishery in predicting a total run size that was close to the preseason expectation of 26,100. Weekly inseason run projections ranged from 25,000 to 26,700 large Chinook salmon.

The 2014 run size of Stikine River coho salmon cannot be quantified. The U.S. harvest of Stikine River coho salmon is also unknown since there is no stock identification program for this species. Mixed stock coho salmon harvest in District 106 was 286,800 fish (50% Alaska hatchery) and District 108 was 30,200 fish (12% Alaska hatchery), and were both well above average. The Canadian inriver coho salmon harvest of 5,400 fish was above average. The annual stream surveys indicated a below average return to the 6 index sites surveyed by Canada; however, inseason weekly CPUE of coho salmon from both the lower Stikine River Canadian fishery and sockeye salmon test fishery (incidentally caught coho salmon) was above average.

Taku River

The final postseason estimate of the 2014 Taku River sockeye salmon terminal run is 143,500 fish, 141,200 wild fish and 2,400 hatchery fish. The U.S. harvested 32,300 Taku River wild fish and Canada harvested 17,300 Taku River wild fish and the estimated above border spawning escapement was 92,500 fish of which 91,600 were wild fish. The terminal run size was below average, the wild escapement was average for the same time period and above the goal range of 71,000 to 80,000 fish. The U.S. harvested an estimated 61% of the U.S. AC and Canada harvested an estimated 130% of the Canadian AC.

The estimated 2014 Taku River large Chinook salmon terminal run was 27,880 fish; above border run was 26,000 fish and spawning escapement was 23,530 fish. The run and harvest were below their respective averages. The total harvest of large Chinook salmon in the inriver assessment/test fishery and Canadian commercial, Aboriginal, and recreational fisheries in the Taku River was 2,470 fish. An assessment/test fishery with a modified goal of 1,200 large Chinook salmon was implemented as the amount of fish needed to obtain a reliable estimate was expected to be reduced due to increased tagging effort using drifted tangle nets in combination with the Canyon Island fish wheels. The traditional District 111 mixed stock drift gillnet fishery total harvest of 1,470 Chinook salmon was below average even when excluding those years in which a directed Chinook salmon fishery occurred.

The estimated above border run of Taku River coho salmon in 2014 is 140,700 fish, which is above average. The Canadian inriver commercial harvest of 14,500 coho salmon was nearly the highest on record, and the additional 2,000 fish harvested in the test fishery results in the largest recorded annual harvest. After all

Canadian harvests are subtracted from the above border run, the above border spawning escapement is estimated at 124,200 coho salmon, which exceeds the PST minimum above border run of 38,000 fish, and is well above the 70,000 fish escapement target managed for until a bilateral escapement goal is finalized. The U.S. harvest of 54,200 coho salmon in the traditional District 111 mixed stock fishery was above average. Alaskan hatcheries contributed an estimated 4,000 fish, or 7% of the District 111 harvest.

The harvest of 29,200 pink salmon in the traditional District 111 fishery was far below average. No pink salmon were reported retained in the Canadian commercial inriver fishery in 2014. The escapement of pink salmon to the Taku River as evidenced by the fish wheel catch and release of 2,400 fish was well below the even-year average.

The harvest of chum salmon in the traditional District 111 fishery was 291,400 fish; composed of 288,400 summer run fish (prior to mid-August) and 3,000 fall run fish. The harvest of summer chum salmon, primarily Alaskan hatchery stocks, was below average. The harvest of fall chum salmon, composed of wild Taku River and Port Snettisham stocks, was also below average. There was nonretention of chum salmon in the Canadian inriver fishery and there was no reported harvest in 2014. Although spawning escapement is not known, the Canyon Island fish wheel catch of 310 chum salmon was above average.

Alsek River

The Alsek River harvest of 33,700 sockeye salmon in the U.S. commercial fishery was well above average. The Canadian inriver Klukshu River recreational fishery reported no harvest (8 sockeye salmon were released) and 1,140 fish were harvested in the Aboriginal fishery. The Klukshu River weir count of 12,400 sockeye salmon was slightly above average and was above the escapement goal range of 7,500 to 11,000 fish. The count of 2,700 early run sockeye salmon (i.e. through August 15) and the late run count of 9,700 fish were both above average.

The Chinook salmon run to the Alsek River was below average. The U.S. Dry Bay harvest of 1,070 large Chinook salmon was above average. The Canadian recreational fishery harvest of 30 fish was below average and the Aboriginal harvest of 20 fish was below average. The 840 Chinook salmon counted through the Klukshu River weir was below average and the estimated escapement of 830 was within the escapement goal range of 800 to 1,200 Chinook salmon.

Current stock assessment programs prevent an accurate comparison of the Alsek River coho salmon run with historical runs. There was minimal effort during the U.S. Dry Bay coho salmon fishery and harvest figures are negligible. The Canadian recreational and Aboriginal fisheries harvested no coho salmon. The operation of the Klukshu River weir does not provide a complete enumeration of coho salmon into this system since it is removed before the run is over.

Enhancement

In 2014, eggs and milt were collected from sockeye salmon escapements at Tahltan and Tatsamenie lakes. A total of approximately 3.9 million eggs were collected at Tahltan Lake, and 1.5 million at Tatsamenie Lake. Prior to the start of egg collection at Tahltan Lake, Canada advised Alaska that they were revising the goal to 5.0 million (from 6.0) because of a decision they had made to stop releases into Tuya Lake; their technical staff had determined that the fry from a 5.0 million level egg take could all be planted into Tahltan Lake without exceeding agreed to stocking guidelines. The revised egg-take goal at Tahltan Lake was not achieved. The egg-take goal of 2 million at Tatsamenie Lake was not achieved due to low escapement however the alternative target of 30% of the female escapement used for broodstock was applied to the project as per the bilaterally agreed Taku Enhancement Production Plan.

In 2014, outplants of broodyear 2013 sockeye salmon fry were as follows: 2.1 million fry into Tahltan Lake; 462,000 fry into Tuya Lake; 1.1 million fry; and 185,000 extended-rearing fry into Tatsamenie Lake. Green-

egg to planted-fry survivals were 60%, and 73% for Tahltan, and Tatsamenie lakes; respectively. Survivals were somewhat lower due to IHNV loss. An estimated 370,000 pre-emergent fry from two Tahltan Lake stock incubators and 184,000 pre-emergent fry from one Tatsamenie Lake stock incubator were confirmed positive with IHNV and destroyed.

Adult sockeye salmon otoliths were processed inseason by the ADF&G otolith lab to estimate weekly contribution of fish from U.S./Canada TBR fry planting programs to District 106, 108, and 111 gillnet fisheries and to Canadian commercial fisheries in the Stikine and Taku rivers. Preliminary contribution estimates of stocked fish to Alaskan harvests were 9,800 stocked Stikine River fish to District 106 and 108, and 900 stocked Taku River fish to District 111. Preliminary estimates of contributions to Canadian fisheries included 15,500 stocked fish to Stikine River fisheries and 400 stocked fish to the Taku River fisheries.

FINAL ESTIMATES OF TRANSBOUNDARY RIVER SALMON PRODUCTION, HARVEST AND ESCAPEMENT AND A REVIEW OF JOINT ENHANCEMENT ACTIVITIES IN 2015

TCTR (17)-2 – January 2017

Final estimates of harvests and escapements of Pacific salmon returning to the transboundary Stikine, Taku, and Alsek rivers for 2015 are presented and compared with historical patterns. Average, unless defined otherwise, refers to the most recent 10-year average (2005–2014). Relevant information pertaining to the management of appropriate U.S. and Canadian fisheries is presented and the use of inseason management models is discussed. Results from TBR sockeye salmon *Oncorhynchus nerka* enhancement projects are also reviewed.

Stikine River

The postseason estimate of the 2015 Stikine River sockeye salmon terminal run was 174,300 fish, of which approximately 93,900 fish were harvested in various fisheries including assessment/test fisheries. An estimated 93,900 Stikine River fish escaped to spawn, including 20,900 fish that migrated to the barrier in the Tuya River that were not harvested. The terminal run was 5,000 fish below average and the harvest was 20,400 fish below average. The Tahltan Lake sockeye salmon total escapement of 33,200 fish was above the goal range of 18,000 to 30,000 fish. The estimated U.S. commercial harvest of Stikine River sockeye salmon in Districts 106 and 108, including the Stikine River subsistence fishery, was 32,000 fish. The sockeye salmon harvest in the Canadian inriver commercial was 51,900 fish and the AF harvest was 8,200 fish. The inriver test fisheries harvested 1,900 sockeye salmon. Weekly inseason run projections from the SMM ranged from 103,700 to 227,800 sockeye salmon; the final inseason model prediction was 227,800 fish, with a TAC of 159,800 fish. Weekly inseason run projections using other methods in concert with the SMM ranged from 128,200 to 217,500 sockeye salmon; the final inseason run size based on this approach was 198,800 sockeye salmon with a TAC of 124,700 fish. Based on the final postseason run size estimate of 174,300 fish and an AC estimate of 51,300 Stikine River sockeye salmon for each country, Canada harvested 117% and the U.S. harvested 62% of their respective TACs. Brood stock collection removed 3,900 sockeye salmon from the escapement to Tahltan Lake leaving a natural spawning escapement of 29,300 fish. The estimated spawning escapement of 26,400 mainstem Stikine River sockeye salmon was within the goal range of 20,000 to 40,000 fish for this stock group.

The 2015 Stikine River large Chinook salmon run was estimated at 27,000 fish, of which approximately 5,700 fish were harvested in various fisheries. The estimated escapement of Stikine River large Chinook salmon was 21,600 fish; above the escapement goal of 17,400 fish and within the escapement goal range 14,000 to 28,000 fish. The run and harvest were below their respective averages. The Little Tahltan River large Chinook salmon escapement of 450 fish was below the Canadian escapement target of 3,300 fish and below the lower bound of the Canadian target range of 2,700 to 5,300 fish. The estimated U.S. commercial harvest of Stikine River Chinook salmon in Districts 108 gillnet, test, troll, subsistence, and sport fisheries was 1,400 fish. The estimated Canadian commercial, Aboriginal, assessment/test, and sport fisheries harvest was 4,300 fish.

Managers used harvest in the MR, model, and other assessment estimates to generate inseason run sizes after SW 25. The inseason run projections were consistent throughout the course of the fishery in predicting a terminal run size that was close to the preseason expectation of 30,200 large Chinook salmon. Weekly inseason run projections ranged from 28,000 to 29,300 large Chinook salmon.

The 2015 run size of Stikine River coho salmon cannot be quantified. The U.S. harvest of Stikine River coho salmon is also unknown since there is no stock identification program for this species. Mixed stock coho salmon harvest in District 106 was 112,600 fish (51% Alaska hatchery) and District 108 was 30,200 fish (23% Alaska hatchery). The Canadian inriver coho salmon harvest of 5,600 fish was above average. The annual aerial surveys indicated a below average return to the 6 index sites that were surveyed by Canada. The inseason weekly CPUE of coho salmon from both the lower Stikine River Canadian fishery and sockeye salmon test fishery (incidentally harvested coho salmon) was below average.

In May 2014, a landslide occurred near the mouth of the Tahltan River. The landslide deposited approximately 8,000 m³ of debris into the river which blocked access to Tahltan River Chinook and sockeye salmon spawning sites until mid-July 2014. Remedial work was done to improve fish passage at the landslide in March 2015. It appeared that the landslide continued to restrict upstream passage, especially during periods of high water in 2015. The extent of the restriction on upstream salmon passage will be evaluated in early 2016 after radio telemetry data analysis is completed.

Taku River

The postseason estimate of the 2015 Taku River sockeye salmon terminal run was 194,400 fish, 193,400 wild fish and 1,000 hatchery fish. The U.S. harvested 41,800 Taku River wild fish. Canada harvested 19,700 wild fish and the estimated above border spawning escapement was 131,900 wild sockeye salmon. The terminal run size was above average and the wild escapement was well above average for the same time period and well above the goal range of 71,000 to 80,000 fish. The U.S. harvested an estimated 44% of the U.S. AC and Canada harvested an estimated 55% of the Canadian AC.

The estimated 2015 Taku River large Chinook salmon terminal run was 32,060 fish; above border run was 31,270 fish and spawning escapement was 28,830 fish. The run was average and the harvest was below average. The total harvest of large Chinook salmon in the inriver assessment/test fishery and Canadian commercial, Aboriginal, and recreational fisheries in the Taku River was 2,450 fish. The traditional District 111 mixed stock drift gillnet fishery total harvest of 1,080 Chinook salmon was below average even when excluding those years in which a directed Chinook salmon fishery occurred.

The estimated above border run of Taku River coho salmon in 2015 was 70,400 fish, which was below average (67% of average). The Canadian inriver commercial harvest was 7,900 coho salmon with an additional 2,000 fish harvested in the assessment/test fishery and 300 fish harvested in the Aboriginal fishery. After all Canadian harvests were subtracted from the above border run the above border spawning escapement was estimated at 60,200 coho salmon, which exceeds the lower bound of the newly adopted escapement goal range of 50,000 to 90,000 fish. The U.S. harvest of 23,200 coho salmon in the traditional District 111 mixed stock fishery was well below average. Alaskan hatcheries contributed an estimated 4,800 fish; 21% of the District 111 harvest.

Alsek River

The 2015 Alsek River harvest of 16,100 sockeye salmon in the U.S. commercial fishery was average. The Canadian inriver recreational fishery reported no sockeye salmon harvest while the Aboriginal food fishery harvest was approximately 1,100 fish. The Klukshu River weir count of 11,600 sockeye salmon was average and was above the escapement goal range of 7,500 to 11,000 fish. The count of 2,600 early run sockeye salmon (i.e. through August 15) and the late run count of 9,000 were both average.

The Chinook salmon run to the Alsek River was above average. The U.S. Dry Bay harvest of 240 large Chinook salmon was below average. The Canadian recreational fishery harvest of 40 fish was average and the Aboriginal harvest of 90 fish was above average. The 1,430 Chinook salmon counted through the Klukshu River weir was above average and the estimated escapement of 1,390 fish was above the escapement goal range of 800 to 1,200 Chinook salmon.

Current stock assessment programs prevent an accurate comparison of the Alsek River coho salmon run with historical runs. There was minimal effort during the U.S. Dry Bay coho salmon fishery and harvest figures are negligible. The Canadian recreational and Aboriginal fisheries harvested no coho salmon. The operation of the Klukshu River weir does not provide a complete enumeration of coho salmon into this system since it is removed before the run is over.

Enhancement

In 2015, eggs and milt were collected from sockeye salmon escapements at Tahltan and Tatsamenie lakes. A total of approximately 4.5 million eggs were collected at Tahltan Lake and 731,000 at Tatsamenie Lake. Prior to the start of egg collection at Tahltan Lake, Canada advised Alaska that they were revising the goal to 5.5 million eggs (from 6.0 million eggs) because of a decision they had made to stop releases into Tuya Lake; their technical staff had determined that the fry from a 5.5 million level egg take could all be planted into Tahltan Lake without exceeding agreed to stocking guidelines. The revised egg-take goal at Tahltan Lake was not achieved. The egg-take goal of 2 million eggs at Tatsamenie Lake was not achieved due to low escapement however the alternative target of 30% of the female escapement used for broodstock was applied to the project as per the bilaterally agreed Taku Enhancement Production Plan.

In 2015, outplants of brood year 2014 sockeye salmon fry were as follows: 2.68 million fry into Tahltan Lake; 731,000 fry and 187,000 extended-rearing fry into Tatsamenie Lake. Green-egg to planted-fry survivals were 76%, and 87% for Tahltan, and Tatsamenie lakes; respectively. An estimated 169,700 pre-emergent fry from one Tatsamenie Lake stock incubator were confirmed positive with IHNV and destroyed.

Adult sockeye salmon otoliths were processed inseason by the ADF&G otolith lab to estimate weekly contribution of fish from U.S./Canada TBR fry planting programs to District 106, 108, and 111 gillnet fisheries and to Canadian commercial fisheries in the Stikine and Taku rivers. Contribution estimates of stocked fish to Alaskan harvests were 14,400 stocked Stikine River fish to District 106 and 108, and 200 stocked Taku River fish to District 111. Estimates of contributions to Canadian fisheries included 29,092 stocked fish to Stikine River fisheries and 130 stocked fish to the Taku River fisheries.

F. JOINT TECHNICAL COMMITTEE ON DATA SHARING

No reports were finalized for publication during this reporting period.

G. JOINT SELECTIVE FISHERY EVALUATION COMMITTEE

REVIEW OF MASS MARKING AND MARK-SELECTIVE FISHERY ACTIVITIES PROPOSED TO OCCUR IN 2016

SFEC (17)-1 – March 2017

This report provides a summary of the proposed coastwide plans for mass marking (MM) of Coho and Chinook salmon and the conduct of mark-selective fisheries (MSFs) in 2016. Issues with implications for maintenance of the coastwide coded-wire-tag program are identified and recommendations are proposed.

Summary of 2016 Mass Marking Proposals

Throughout this report a mass marked fish refers to a fish with an adipose-fin clip and a double-index-tag (DIT) group includes two related coded-wire-tag (CWT) groups, one marked and one unmarked. The terms 'marked' and 'clipped', and likewise 'unmarked' and 'unclipped', are used interchangeably.

Mass Marking and DIT Programs

Twenty-two proposals (8 for Coho, 13 for Chinook, and 1 Coho/Chinook) were received for mass marking (MM) occurring in 2016 (Appendix A). Of these, one was received from southern British Columbia (BC) and 21 from southern United States (US). The Selective Fishery Evaluation Committee (SFEC) believes these proposals cover all MM programs of relevance to the Pacific Salmon Commission (PSC).

Within the MM proposals received from southern BC and southern US, approximately 33.4 million Coho Salmon are proposed to be mass marked in 2016 (Table 2-1; Figure 2-1A), approximately 900,000 less than proposed in 2015. Essentially all hatchery Coho Salmon production intended for harvest, from southern BC and southern US hatcheries will be mass marked. Currently there are 15 proposed Coho Salmon DIT groups (Table 2-1; Appendix C), of which one will be released from southern BC, seven from Puget Sound, four from the Washington (WA) coast, and three from the Columbia River Basin. This is unchanged from what was proposed for 2015.

Approximately 118 million Chinook Salmon are proposed to be mass marked in 2016 from southern US hatcheries (Table 2-1; Figure 2-1B). This level is approximately 400,000 more than the number proposed to be mass marked in 2015. Most all hatchery Chinook Salmon production from southern US hatcheries intended for harvest will be mass marked. Currently there are 14 proposed Chinook Salmon DIT groups (Table 2-1, Appendix D), of which seven are from Puget Sound facilities, three from coastal facilities, and four from Columbia River facilities. The number of DIT groups is unchanged from the 2015 proposals.

Sampling Programs

Prior to MM, the adipose-fin clip was employed as a visual indicator for fish containing a CWT. Consequently, sampling programs which were designed to collect heads from fish with missing adipose fins resulted in samples of heads, all which contained CWTs. With MM, a large number of marked fish do not contain CWTs; further, CWTs must be recovered from both marked and unmarked fish to obtain data for DIT releases to estimate fishery impacts. Electronic tag detection (ETD) equipment has been developed as a means to efficiently identify marked and unmarked fish containing CWTs. However, ETD is not employed coastwide because of continuing reservations by some agencies regarding the cost, accuracy, and practical feasibility of incorporating this technology into their sampling programs. Alaska Department of Fish and Game (ADFG), Canadian Department of Fisheries and Oceans (CDFO), Oregon Department of Fish and Wildlife (ODFW), and California Department of Fish and Wildlife (CDFW) conduct some fishery sampling programs which will not recover the unclipped component of DIT programs required to assess impacts of MSFs. Fisheries from which unmarked DIT recoveries should have been observed create gaps in analyses of fishery impacts on unmarked (wild) fish.

Considering sampling programs coastwide, some agencies already implement comprehensive electronic sampling strategies to recover CWTs from sport and commercial fisheries, while other agencies are still working to increase the use of ETD equipment. Washington State continues to implement electronic sampling in most locations and reports CWT recoveries of the unmarked components of DIT groups in recreational marine and some freshwater MSFs, as well as in non-selective fisheries (NSFs). Starting in 2008, Canada committed to full electronic sampling and reporting of all CWTs in all commercial fisheries for Chinook Salmon. Coho Salmon in Canadian commercial fisheries are visually sampled, except for heads delivered by northern freezer trollers, which are electronically sampled. Canada continues to rely on the Sport Head Recovery Program (SHRP) to recover CWTs from recreational NSFs and MSFs alike, and thus no unmarked coded-wire-tagged recoveries are available from them. Oregon Department of Fish and Wildlife continues to use visual sampling for fall Chinook Salmon and electronic sampling for spring Chinook and Coho salmon in the Columbia River. Beginning in 2011, ODFW initiated electronic sampling of all ocean recreational and commercial salmon fisheries off the coast of Oregon (OR). Alaska conducts visual sampling; however, they electronically screen heads in most locations to send tagged heads only to the dissection lab. Alaska Department of Fish and Game plans to sample unmarked fish for CWTs at a rate of 10% for troll fisheries in 2016.

Encounters of large numbers of mass marked Chinook Salmon are increasingly impacting catch sampling programs in northern fisheries; for example, approximately 74% of the Chinook caught in 2015 in the southeast Alaskan troll fishery with a missing adipose fin did not contain a CWT (Figure 2-4). The increased costs to deal with the additional marked fish (e.g., storage, and shipping to and sorting of heads in the dissection laboratories) are not quantified, but do impact the programs.

Summary of 2016 Mark-Selective Fishery Proposals

Mark-selective fisheries have been prosecuted for Coho Salmon since 1998 and for Chinook Salmon since 2003. For 2016, the SFEC received 59 MSF proposals for Coho and Chinook salmon in ADFG, CDFW, WDFW, and ODFW fisheries. The SFEC believes these proposals cover all MSFs planned for 2016 of relevance to the PSC. The proposals submitted to the SFEC for review are listed in Table 3-1 (also see Appendix B). Further details describing the proposed MSFs and comments made by the SFEC are provided in Table 3-3.

Twenty-two proposals were received for Coho Salmon MSFs to occur in 2016, 36 proposals were received for Chinook Salmon MSFs, and one proposal was received for a joint Coho and Chinook MSF. Agencies provided the majority of the requested information in each of the proposals and the proposals were submitted on time.

SFEC received six proposals for new Chinook Salmon mark-selective sport fisheries. Five of these were for fisheries within the Columbia River Basin and one was for a MSF along the Oregon Coast.

Up until 2008, Chinook MSFs were largely restricted to Puget Sound and Columbia River spring Chinook Salmon. Since then, Chinook MSFs have expanded substantially in both marine and freshwater areas. In 2007, 12 Chinook MSFs were prosecuted; in 2016, that number has tripled to 36 Chinook MSFs and a larger number of indicator stocks are now vulnerable to being encountered in MSFs.

The majority of MSF proposals are for terminal marine or freshwater areas, each of which will impact mature fish of one to several stocks. Multiple MSFs for both Coho and Chinook salmon are also expected to continue to occur in ocean areas in 2016 in BC, WA, and OR. These fisheries will impact many stocks and also multiple broods of Chinook Salmon. Table 3-4 and Table 3-5 each provide historical information on encounters of tagged and marked fish to identify Coho and Chinook salmon tagged stocks that can be expected in these areas with MSFs.

Issues and Concerns

Post-Season Reports

Post-season reports on MSFs are required for each MSF prosecuted. One of the basic functions of these reports is to provide a record of how fisheries were actually prosecuted (whether they took place) and whether there were any changes in the way the fisheries and sampling programs were conducted relative to the proposal. These reports are to be submitted in the form of tables (see PSC website for current templates). The first two tables should be submitted by the annual PSC post-season meeting following the year of the fishery. US or Canadian PSC post-season reports continue to be missing SFEC post-season report/tables for most MSFs. Although these SFEC tables are not included in the PSC post-season reports, CDFO and WDFW do provide fishery regulations and preliminary landed catch estimates for mark-selective fisheries in these reports.

Mixed Bag Regulations

Regulations to implement MSFs are increasingly complex, making analyses to estimate impacts challenging in a number of ways. Mixed bag regulations are part of the MSFs proposed by Canada, Washington, and Oregon for recreational fisheries (Figure 4-1 through Figure 4-4). As MSFs expand, a larger variety of mixed bag regulations are now proposed. The regulations include a range of rules that specify when and how anglers may retain various combinations of adult and juvenile marked and unmarked fish in their daily bag limits. The SFEC is not aware of reliable methods for estimating impacts on marked and unmarked fish under mixed bag regulations and the agencies proposing these mixed bag regulations should assist in developing the analytical tools to measure the impacts of these fisheries.

Recommendations and Issues Requiring PSC Direction

Proposal Review Process

It is recommended that the PSC continue to issue a request to the agencies to submit proposals for all potential MM and MSFs by November 1 each year as per the MOU, and for agencies to provide both preliminary and final post-season reports on the conduct of MSFs within the timeframe adopted by the PSC. Agencies need to prioritize these tasks so that proposals and MSF post-season reports are completed and submitted in a timely manner.

Interagency Coordination and Cooperation

Mass marking, double-index tagging, and CWT sampling programs continue to be insufficiently coordinated to support analysis by PSC technical committees. It is also not clear that agencies are collecting adequate and necessary data to permit estimation of unmarked CWT recoveries in fisheries and escapements so that cohort reconstructions can be carried out on the unmarked component of the DIT group releases. With the expansion of Chinook Salmon marine MSFs, the geographic range of electronic CWT sampling may need to be expanded and the number of double-index-tagged stocks may need to be increased, assuming double-index-tagging is providing valid analyses.

The PSC and Agencies should support technical and policy processes to develop agreements and clarify responsibilities for maintaining a functional CWT system; these processes should build upon recommendations presented by the CWT Work Group in 2008.

Publications of the Pacific Salmon Commission

PART VI

PUBLICATIONS OF THE PACIFIC SALMON COMMISSION

Documents listed herein are available to domestic fishery agencies of Canada and the United States, research organizations, libraries, scientists and others interested in the activities of the Commission, through the offices of the Secretariat, 600 - 1155 Robson Street, Vancouver, B.C., V6E 1B5. Photocopying charges may be levied for documents which are out of print.

Reports published by the Pacific Salmon Commission after March 31, 2000 including Commission annual reports, annual reports of the Fraser River Panel, Joint Technical Committee reports and technical reports of the Pacific Salmon Commission are also available in full text format on the Commission's website at www.psc.org.

Documents listed here are those which were published during the period from 2016/17 inclusive. For previous publications, please refer to the Pacific Salmon Commission's website at www.psc.org/publications.

A. ANNUAL REPORTS

Pacific Salmon Commission 2013/2014 Twenty Ninth Annual Report. November 2016.

Pacific Salmon Commission 2014/2015 Thirtieth Annual Report. November 2016.

Pacific Salmon Commission 2015/2016 Thirty First Annual Report. February 2017.

B. REPORTS OF JOINT TECHNICAL COMMITTEES

i. Joint Chinook Technical Committee

TCCHINOOK (16)-2 *Chapter 3 Performance Evaluation Report.* November 2016.

TCCHINOOK (16)-3 *Annual Report of Catch and Escapement for 2015.* July 2016.

TCCHINOOK (17)-1 *2016 Exploitation Rate Analysis and Model Calibration Supplement Data Notebook.* February 2017.

ii. Joint Chum Technical Committee

TCCHUM (16)-1 *2013 Post Season Summary Report.* May 2016.

iii. Joint Coho Technical Committee

No reports were finalized for publication during this reporting period.

iv. Joint Data Sharing Technical Committee

No reports were finalized for publication during this reporting period.

v. Joint Northern Boundary Technical Committee

TCNB (17)-1 *U.S./Canada Northern Boundary Area 2016 Salmon Fisheries Management Report and 2017 Preliminary Expectations*. March 2017.

vi. Joint Transboundary Technical Committee

TCTR (16)-1 *Salmon Management and Enhancement Plans for the Stikine, Taku and Alsek Rivers, 2016*. June 2016.

TCTR (17)-1 *Final Estimates of Transboundary River Salmon Production, Harvest and Escapement and a Review of Joint Enhancement Activities in 2014*. January 2017.

TCTR (17)-2 *Final Estimates of Transboundary River Salmon Production, Harvest and Escapement and a Review of Joint Enhancement Activities in 2015*. January 2017.

vii. Selective Fishery Evaluation Committee

SFEC (17)-1 *Review of Mass Marking and Mark-Selective Fishery Activities Proposed to Occur in 2016*. March 2017.

C. REPORTS OF THE FRASER RIVER PANEL

Report of the Fraser River Panel to the Pacific Salmon Commission on the 2015 Fraser River Sockeye and Pink Salmon Fishing Season. November 2016.

Report of the Fraser River Panel to the Pacific Salmon Commission on the 2012 Fraser River Sockeye Salmon Fishing Season. March 2017.

D. TECHNICAL REPORT SERIES OF THE PACIFIC SALMON COMMISSION

PSC Technical Report No. 35. *Review of Methods for Forecasting Chinook Salmon Abundance in the Pacific Salmon Treaty Areas*. Report to the Pacific Salmon Commission. November 2016.

PSC Technical Report No. 36. *Feasibility of Radio-Frequency Identification Tags for Marking Juvenile Salmon for Pacific Salmon Commission Management Applications*. February 2017.

E. PUBLICATIONS BY PACIFIC SALMON COMMISSION SECRETARIAT STAFF

No reports were finalized for publication during this reporting period.

F. REPORTS OF THE INTERNATIONAL PACIFIC SALMON COMMISSION

Responsibility for maintenance of the library of the International Pacific Salmon Fisheries Commission, on its termination December 31, 1985, was transferred to the Pacific Salmon Commission. Documents in the Library include historical archival papers which are available to researchers and other interested parties through contact with the Pacific Salmon Commission's Librarian.

Publication of John F. Roos' *History of the International Pacific Salmon Fisheries Commission*, and P. Gilhousen's *Estimation of Fraser River Sockeye Escapements* ended all publication series of the International Pacific Salmon Fisheries Commission. Copies of all in-print Progress Reports and Bulletins of the International Pacific Salmon Fisheries Commission are available free of charge through the Library of the

Pacific Salmon Commission. Copies of the History of the International Pacific Salmon Fisheries Commission may also be ordered through the Library of the Pacific Salmon Commission.

G. DOCUMENTS SUBMITTED BY THE PARTIES

In compliance with provisions of the Treaty, the Parties provide annual post-season fishery reports and updates on their respective salmonid enhancement programs to the Commission. Documents received during 2016/17 were:

1. *Post Season Report for 2016 Canadian Treaty Limit Fisheries.* Fisheries and Oceans Canada. January 20, 2017.
2. *2016 Post Season Report United States Salmon Fisheries of Relevance to the Pacific Salmon Treaty.* United States Section. December 29, 2016.

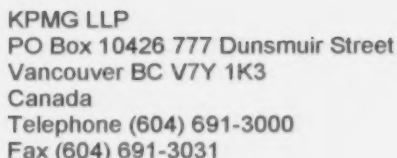
Report of the Auditors for 2016/2017

PART VII
AUDITORS' REPORT AND FINANCIAL STATEMENTS FOR THE PERIOD APRIL 1,
2016 TO MARCH 31, 2017

Financial Statements of

PACIFIC SALMON COMMISSION

Year ended March 31, 2017



To the Commissioners of the Pacific Salmon Commission

We have audited the accompanying financial statements of the Pacific Salmon Commission, which comprise the statement of financial position as at March 31, 2017, the statements of operations and fund balances and cash flows for the year then ended, and notes, comprising a summary of significant accounting policies and other explanatory information. The financial statements have been prepared by management in accordance with the financial reporting provisions of Chapter IX of the Pacific Salmon Commission Bylaws amended and adopted February 11, 2017.

Management is responsible for the preparation of these financial statements in accordance with the financial reporting provisions of Chapter IX of the Pacific Salmon Commission Bylaws amended and adopted February 11, 2017; this includes determining that the basis of accounting is an acceptable basis for the preparation of these financial statements in the circumstances, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on our judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, we consider internal control relevant to the entity's preparation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.



We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements as at and for the year ended March 31, 2017 are prepared, in all material respects, in accordance with the financial reporting provisions of Chapter IX of the Pacific Salmon Commission Bylaws amended and adopted February 11, 2017.

Basis of Accounting

Without modifying our opinion, we draw attention to note 2(a) to the financial statements, which describes the basis of accounting. The financial statements are prepared to assist the Pacific Salmon Commission to meet the requirements of the Treaty between the Government of Canada and the Government of the United States of America concerning Pacific Salmon effective January 1, 2013. As a result, the financial statements may not be suitable for other purposes.

Restriction on Use

Our report is intended solely for the Commissioners and the Governments of Canada and the United States of America and should not be used by parties other than the Commissioners and the Governments of Canada and the United States of America.

KPMG LLP

Chartered Professional Accountants

October 10, 2017
Vancouver, Canada

PACIFIC SALMON COMMISSION

Statement of Financial Position
(Expressed in Canadian dollars)

March 31, 2017, with comparative information for 2016

	General Fund	Working Capital Fund	Test Fishing Fund	Restricted Special Research and Project Fund	Capital Assets Fund	Yukon River Legacy Fund	Total	2017	2016
Assets									
Current assets:									
Cash	\$ 1,369,169	\$ -	\$ -	\$ 261,073	\$ -	\$ -	\$ 261,073	\$ 1,630,242	\$ 2,184,203
Accounts receivable	300,596	401	453,748	188,835	-	-	642,984	943,580	971,701
Due from trust funds (note 6)	2,813	-	-	-	-	-	-	25,813	147,871
Prepaid expenses	276,899	-	-	-	-	-	-	276,899	502,067
Short-term investments	2,071,723	105,470	479,839	-	-	-	585,309	2,657,032	2,603,970
	4,044,200	105,871	933,587	449,908	-	-	1,489,366	5,533,566	6,409,812
Capital assets (note 4)	-	-	-	-	682,005	-	682,005	682,005	695,026
	\$ 4,044,200	\$ 105,871	\$ 933,587	\$ 449,908	\$ 682,005	\$ -	\$ 2,171,371	\$ 6,215,571	\$ 7,104,838
Liabilities and Fund Balances									
Current liabilities:									
Accounts payable	\$ 1,017,860	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,017,860	\$ 859,029
Deferred revenue (note 3)	1,269,818	-	-	-	-	-	-	1,269,818	2,319,636
	2,287,678	-	-	-	-	-	-	2,287,678	3,178,665
Accrued employee future benefit liability (note 5)	540,387	-	-	-	-	-	-	540,387	580,929
Fund balances:									
Unrestricted	1,216,135	-	-	-	-	-	-	1,216,135	710,719
Restricted	-	105,871	933,587	449,908	-	-	1,489,366	1,489,366	1,939,499
Invested in capital assets	-	-	-	-	682,005	-	682,005	682,005	695,026
	1,216,135	105,871	933,587	449,908	682,005	-	2,171,371	3,387,506	3,345,244
	\$ 4,044,200	\$ 105,871	\$ 933,587	\$ 449,908	\$ 682,005	\$ -	\$ 2,171,371	\$ 6,215,571	\$ 7,104,838

See accompanying notes to financial statements.

Approved on behalf of the Commission:

Chair, Standing Committee on Finance and Administration

W. Ron Allen

Vice-Chair, Standing Committee on Finance and Administration

PACIFIC SALMON COMMISSION

Statement of Operations and Fund Balances
(Expressed in Canadian dollars)

Year ended March 31, 2017, with comparative information for 2016

	General Fund	Working Capital Fund	Test Fishing Fund	Restricted Special Research and Project Fund	Capital Assets Fund	Yukon River Legacy Fund	Total	2017	2016
Revenue:									
Contributions from contracting parties (note 3)	\$ 3,759,272	\$ -	\$ 451,076	\$ -	\$ -	\$ -	\$ 451,076	\$ 4,210,348	\$ 4,509,272
Special contributions – pension	220,000	-	-	-	-	-	-	220,000	-
Grants	157,111	-	-	1,852,320	-	-	1,852,320	2,009,431	2,002,753
Interest	20,885	1,024	7,496	-	-	4,557	13,077	33,962	37,321
Administration fees	225,417	-	-	-	-	-	-	225,417	203,165
Other	71	-	-	-	-	-	-	71	23,683
Foreign exchange gain	30,868	-	-	-	-	-	-	30,868	35,986
Test fishing	-	-	205,387	-	-	-	205,387	205,387	739,768
	4,413,624	1,024	663,959	1,852,320	-	4,557	2,521,860	6,935,484	7,551,948
Expenses:									
Amortization	-	-	-	-	203,890	-	203,890	203,890	145,013
Salaries and employee benefits	2,585,844	-	-	-	-	-	-	2,585,844	2,724,812
Unfunded pension liability payments	221,412	-	-	-	-	-	-	221,412	221,412
Travel and transportation	68,445	-	-	-	-	-	-	68,445	80,264
Rents and communication	130,286	-	-	-	-	-	-	130,286	119,443
Contract services	666,089	-	-	-	-	-	-	666,089	641,633
Materials and supplies	34,901	-	-	-	-	-	-	34,901	36,034
Loss on disposal of capital assets	-	-	-	-	10,362	-	10,362	10,362	5,853
Test fishing	-	-	656,996	-	-	-	656,996	656,996	1,461,445
Consultations and workshops	-	-	-	1,811,488	-	-	1,811,488	1,811,488	2,074,030
Contribution to Yukon River Fund (note 6)	-	-	-	-	-	503,509	503,509	503,509	-
	3,706,977	-	656,996	1,811,488	214,252	503,509	3,186,245	6,893,222	7,509,939
Excess (deficiency) of revenue over expenses	706,647	1,024	6,963	40,832	(214,252)	(498,952)	(664,385)	42,262	42,009
Fund balance, beginning of year	710,719	104,847	926,624	409,076	695,026	498,952	2,634,525	3,345,244	3,303,235
Interfund transfers	(201,231)	-	-	-	201,231	-	201,231	-	-
Fund balance, end of year	\$ 1,216,135	\$ 105,871	\$ 933,587	\$ 449,908	\$ 682,005	\$ -	\$ 2,171,371	\$ 3,387,506	\$ 3,345,244

See accompanying notes to financial statements.

PACIFIC SALMON COMMISSION

Statement of Cash Flows
(Expressed in Canadian dollars)

Year ended March 31, 2017, with comparative information for 2016

	2017	2016
Cash provided by (used in):		
Operations:		
Excess of revenue over expenses	\$ 42,262	\$ 42,009
Items not involving cash:		
Amortization	203,890	145,013
Loss on disposal of capital assets	10,362	5,853
Accrued employee benefits	(40,542)	26,065
Net change in non-cash operating working capital	(515,640)	189,630
	(299,668)	408,570
Investing:		
Additions to capital assets	(201,281)	(353,347)
Proceeds on sale of capital assets	50	790
Redemption of short-term investments	2,603,970	3,352,693
Purchase of short-term investments	(2,657,032)	(2,603,970)
	(254,293)	396,166
Increase (decrease) in cash	(553,961)	804,736
Cash, beginning of year	2,184,203	1,379,467
Cash, end of year	\$ 1,630,242	\$ 2,184,203

See accompanying notes to financial statements.

PACIFIC SALMON COMMISSION

Notes to Financial Statements

(Tabular amounts expressed in Canadian dollars, unless otherwise noted)

Year ended March 31, 2017

1. Nature of organization:

Pacific Salmon Commission (the "Commission") was established by a Treaty between the Governments of Canada and the United States of America (the "Contracting Parties") to promote cooperation in the management, research, and enhancement of Pacific Salmon stocks. The Treaty was ratified on March 18, 1985 and amended most recently on January 1, 2013.

2. Significant accounting policies:

(a) Basis of accounting:

These financial statements have been prepared in accordance with the financial reporting provisions of Chapter IX of the Pacific Salmon Commission Bylaws amended and adopted February 11, 2016. The financial reporting provisions of Chapter IX of the Pacific Salmon Commission Bylaws amended and adopted February 11, 2016 require the financial statements to be prepared in a manner consistent with generally accepted accounting principles ("GAAP") with the following exceptions:

- (i) Expenses are recognized at the time that the commitment for goods and services are made through purchase orders, rather than at the time the goods or services are received. This exception is to comply with Chapter IX, Section D, Rule 10 of the Bylaws.
- (ii) The Commission uses the triennial pension valuation report provided by the International Fisheries Commissions Pension Society (IFCPS) to determine the yearly pension expense. The pension expense consists of the employer portion of the current service pension contribution plus any additional yearly payments required by the IFCPS (as shown in the current valuation report) that are necessary to extinguish the unfunded portion of the pension obligation. Other post-employment benefits such as extended medical plans and life insurance are recorded as an expense in the fiscal year in which the respective invoice is dated. This exception is to comply with Chapter IX, Section D, Rule 11 of the Bylaws.

Canadian GAAP has been interpreted to mean Canadian Accounting Standards for Not-for-Profit Organizations in Part III of the CPA Canada Handbook ("Not-for-Profit Standards").

(b) Fund accounting and revenue recognition:

The Commission follows the restricted fund method of accounting for contributions.

Restricted contributions related to general operations are initially deferred and recognized as revenue of the General Fund in the year in which the related expenses are incurred. All other restricted contributions are recognized as revenue of the appropriate restricted fund.

Unrestricted contributions are recognized as revenue of the General Fund in the year they are received or receivable, if the amount to be received can be reasonably estimated and collection is reasonably assured.

PACIFIC SALMON COMMISSION

Notes to Financial Statements

(Tabular amounts expressed in Canadian dollars, unless otherwise noted)

Year ended March 31, 2017

2. Significant accounting policies (continued):

(b) Fund accounting and revenue recognition (continued):

The Fund classifications are as follows:

- (i) The General Fund includes funds provided annually through contributions from the Contracting Parties. By agreement of the Contracting Parties, any unexpended balance remaining at the end of one fiscal year may be used to offset contributions in the following year or may be used to offset a shortfall between contributions and approved expenses in the following year. As a result, all amounts are recognized as revenue once received or receivable.
- (ii) The Working Capital Fund represents monies contributed by the Contracting Parties to be used on a temporary basis to satisfy the capital requirements of the Committee until receipt of new contributions from the Contracting Parties at the beginning of a fiscal year, or for special programs not contained in the regular budget but approved during the fiscal year. Any surplus above a pre-determined fixed limit in the account at the end of the fiscal year is transferred to the general fund and is treated as unrestricted income.
- (iii) The Test Fishing Fund is established as a revolving fund in which a portion of net test fishing revenues realized in years of high abundance are reserved, to be used to support test fishing programs in years of low abundance and when conservation concerns are an issue.
- (iv) The Special Research and Project Fund represents monies set aside to fund additional programs as determined by the Contracting Parties, including studies related to Coho Salmon, US Grant Funds for Chinook Technical Committee Support, Chinook Sentinel Stocks Program, Anadromous Fish Grant, Decline in Survival of Fraser River Sockeye, and the Killer Whale Workshop.
- (v) The Capital Assets Fund reflects the Commission's capital asset transactions. Amortization is charged to the Capital Assets Fund.
- (vi) The Yukon River Legacy Fund represents funds transferred to the Commission from the Yukon River Panel Society (the "Society"), upon the dissolution of the Society. The use of the funds is restricted to expenditures authorized by the Yukon River Panel. The Yukon River Legacy Fund has been dissolved as of March 31, 2017.

Transfers between the funds are reviewed and approved by the Commissioners.

(c) Financial instruments:

Financial instruments are recorded at fair value on initial recognition. Freestanding derivative instruments that are not in a qualifying hedging relationship and equity instruments that are quoted in an active market are subsequently measured at fair value. All other financial instruments are subsequently recorded at cost or amortized cost, unless management has elected to carry the instruments at fair value. The Commission has not elected to carry any such financial instruments at fair value.

PACIFIC SALMON COMMISSION

Notes to Financial Statements

(Tabular amounts expressed in Canadian dollars, unless otherwise noted)

Year ended March 31, 2017

2. Significant accounting policies (continued):

(c) Financial instruments (continued):

Transaction costs incurred on the acquisition of financial instruments measured subsequently at fair value are expensed as incurred. All other financial instruments are adjusted by transaction costs incurred on acquisition and financing costs, which are amortized using the straight-line method.

Financial assets are assessed for impairment on an annual basis at the end of the fiscal year if there are indicators of impairment. If there is an indicator of impairment, the Commission determines if there is a significant adverse change in the expected amount or timing of future cash flows from the financial asset. If there is a significant adverse change in the expected cash flows, the carrying value of the financial asset is reduced to the highest of the present value of the expected cash flows, the amount that could be realized from selling the financial asset or the amount the Commission expects to realize by exercising its right to any collateral. If events and circumstances reverse in a future period, an impairment loss will be reversed to the extent of the improvement, not exceeding the initial carrying value.

(d) Capital assets:

Capital assets are stated at cost less accumulated amortization. Costs of repairs and replacements of a routine nature are charged as a current expense while those expenses which improve or extend the useful life of the assets are capitalized. Amortization is provided using the straight-line method as follows:

Asset	Rate
Automobiles	5 years
Boats	5 years
Computer equipment and software	3 years
Equipment	5 years
Furniture and fixtures	10 years
Leasehold improvements	Over life of lease

(e) Income taxes:

The Commission is a non-taxable organization under the Foreign Missions and International Organizations Act (1991).

PACIFIC SALMON COMMISSION

Notes to Financial Statements

(Tabular amounts expressed in Canadian dollars, unless otherwise noted)

Year ended March 31, 2017

2. Significant accounting policies (continued):

(f) Post-employment benefits:

(i) Pension plan:

The Commission has a defined benefit pension plan covering its employees. The benefits are based on years of service and final average salary. The Commission also sponsors a defined benefit life insurance and health care plan for substantially all retirees and employees. The Commission recognizes, annually, an expense equal to the amount of the required payment set forth by the pension plan, which is based on a triennial pension valuation. The Commission does not recognize an unfunded obligation related to the defined benefit pension plan, as referenced in note 5.

(ii) Severance:

Severance is accrued based on employees' current salary and number of years of service.

(g) Foreign exchange translation:

Transactions originating in foreign currencies are translated at the exchange rate prevailing at the transaction dates. Assets and liabilities denominated in foreign currency at the year-end date are translated to equivalent Canadian amounts at the rate of exchange in effect at that date. Foreign exchange gains and losses resulting from translation are included in the determination of excess or deficiency of revenue over expenses.

(h) Use of estimates:

The preparation of financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Significant areas requiring the use of management estimates relate to the determination of the valuation of accounts receivable, useful lives of capital assets for amortization, the estimate of liabilities and contingencies, and the assumptions with respect to post-employment benefits. Actual results could differ from those estimates.

(i) Short-term investments:

The short-term investments are managed by an external investment manager and are recorded at face value plus accrued interest.

(j) Life insurance and medical benefits:

The Commission recognizes, annually, an expense equal to the total amounts invoiced by health and life insurance benefit providers during the fiscal year.

PACIFIC SALMON COMMISSION

Notes to Financial Statements

(Tabular amounts expressed in Canadian dollars, unless otherwise noted)

Year ended March 31, 2017

3. Related parties:

During the year ended March 31, 2017, the Commission recognized operating contributions from the Contracting Parties totaling \$3,759,272 (2016 - \$3,759,272). The Commission received nil (2016 - nil) of operating contributions from the Government of Canada and \$939,818 (2016 - \$1,879,636) of operating contributions from the Government of the United States of America relating to future periods. The Commission received \$nil (2016: \$330,000) from the Government of Canada and \$110,000 (2016 - \$110,000) from the Government of the United States of America in special contributions relating to future payments to International Fisheries Commission Pension Society for the unfunded pension liability. These amounts have been included in deferred revenue and will be recognized when the related expense has been incurred. The Commission recognized \$251,076 in contributions from the Government of Canada (2016 - \$750,000) and \$200,000 (2016 - nil) of contributions from the Government of the United States of America to supplement the Test Fishing Fund. The Commission also received \$226,185 of contributions from the Government of the United States of America as prepayment of dues.

The Commission retains nil (2016 - \$66,964) of funds provided by Canada during 2006 to 2012, when the Larocque court decision required government funding in lieu of fish sales to fund test fishing operations in Canadian waters. Under the terms of the agreement, any unspent funds may be held by the Commission and used upon authorization from the Government of Canada to help fund test fishing operations administered by Fisheries and Oceans Canada in non-Panel area waters.

The Commission retains \$260,297 (2016: nil) of funding provided by Canada, to be used upon authorization from the Government of Canada to help fund test fishing operations administered by Fisheries and Oceans Canada and/or other parties in non-Panel-approved area waters.

The office and warehouse premises of the Commission are provided by the Government of Canada at no charge.

Deferred revenue consists of unspent funds provided by the Contracting Parties that are reserved for future operating and capital expenditures of the Fund.

	2017	2016
Balance, beginning of year	\$ 2,319,636	\$ 939,818
Operating contributions received	939,818	4,699,090
Special contributions	110,000	440,000
Recognized as revenue	(2,099,636)	(3,759,272)
Balance, end of year	\$ 1,269,818	\$ 2,319,636

PACIFIC SALMON COMMISSION

Notes to Financial Statements

(Tabular amounts expressed in Canadian dollars, unless otherwise noted)

Year ended March 31, 2017

4. Capital assets:

March 31, 2017	Cost	Accumulated amortization	Net book value
Automobiles	\$ 256,548	\$ 223,109	\$ 33,439
Boats	157,646	121,913	35,733
Computer equipment	643,034	553,041	89,993
Computer software	386,387	251,819	134,568
Equipment	1,727,041	1,460,600	266,441
Furniture and fixtures	425,373	308,301	117,072
Leasehold improvements	133,519	128,760	4,759
	\$ 3,729,548	\$ 3,047,543	\$ 682,005

March 31, 2016	Cost	Accumulated amortization	Net book value
Automobiles	\$ 256,548	\$ 207,816	\$ 48,732
Boats	139,090	120,824	18,266
Computer equipment	624,238	519,468	104,770
Computer software	357,160	205,398	151,762
Equipment	1,668,582	1,384,591	283,991
Furniture and fixtures	374,994	297,446	77,548
Leasehold improvements	133,519	123,562	9,957
	\$ 3,554,131	\$ 2,859,105	\$ 695,026

5. Employee future benefits:

(i) Pension plan:

The Commission and its employees contribute to the Pension Plan of the International Fisheries Commissions Pension Society for Employees of Participating Commissions, a multi-employer defined benefit plan, with Headquarters in Canada. The Plan covers 83 employees, of which 44 are current or past employees of the Commission.

PACIFIC SALMON COMMISSION

Notes to Financial Statements

(Tabular amounts expressed in Canadian dollars, unless otherwise noted)

Year ended March 31, 2017

5. Employee future benefits (continued):

(i) Pension plan (continued):

The last actuarial valuation for the pension plan was performed as at January 1, 2017. Selected information about the Commission's defined benefit plan is as follows:

	January 1, 2017
Fair value of plan assets	\$ 11,866,000
Benefit obligation	15,123,000
Funded status - plan deficit	\$ (3,257,000)

The funded status of the plan is not included in the statement of financial position.

A significant actuarial assumption adopted in measuring the Commission's benefit obligation is the use of a discount rate of 5.4% and expected rate of return on assets of 5.4%.

During the year ended March 31, 2017, the Commission made payments totaling nil (2016 - \$221,412) with respect to the unfunded pension obligation. The commission made a prepayment of nil (2016 - \$442,824) toward the future unfunded pension liability.

(ii) Severance, life insurance and medical benefits:

The Commission also provides employee future benefits including severance, life insurance and medical benefits. Employees are entitled to severance payments calculated based on the length of continuous service completed by the employee.

6. Trust funds:

The Commission administers and holds, in trust, the following funds, which are not included in the Commission's financial statements:

(a) Northern Boundary and Transboundary River Restoration and Enhancement Trust Fund and Southern Boundary and Transboundary River Restoration and Enhancement Trust Fund:

Northern Boundary and Transboundary River Restoration and Enhancement Trust Fund ("Northern Fund") was created by the Governments of the United States of America and Canada to manage their interests in the Commission to promote cooperation in the management, research and enhancement of Pacific Salmon stocks. The Northern Fund is a non-taxable organization under the Foreign Missions and International Organizations Act (1991) and is not subject to income tax. The income earned on these contributions is distributed by the Commission staff as directed by the Northern Fund Committee.

PACIFIC SALMON COMMISSION

Notes to Financial Statements

(Tabular amounts expressed in Canadian dollars, unless otherwise noted)

Year ended March 31, 2017

6. Trust funds (continued):

(a) (Continued):

Southern Boundary and Transboundary River Restoration and Enhancement Trust Fund ("Southern Fund") was created by the Governments of the United States of America and Canada to manage their interests in the Commission to promote cooperation in the management, research, and enhancement of Pacific Salmon stocks. The Southern Fund is defined as a non-taxable organization under the Foreign Missions and International Organizations Act (1991) and is not subject to income tax. The income earned on these contributions is distributed by the Commission staff as directed by the Southern Fund Committee.

During the fiscal year ended March 31, 2017, the Commission received funding for projects from the Northern Fund and Southern Fund totaling \$1,466,074 (2016 - \$1,679,148). During the year, the Northern Fund and Southern Fund paid \$330,854 (2016 - \$319,694) to the Commission for administrative services. As at March 31, 2017, the Commission had a receivable from the Northern Fund and Southern Fund of \$18,376 (2016 - \$134,090).

(b) Payroll Trust Funds:

The Commission administers and holds trust funds on behalf of the Government of the United States to distribute U.S. section salary under a Memorandum of Understanding. These amounts have been excluded from the statement of financial position and statement of operations and fund balances of the Commission.

(c) U.S. Expenditures Trust Funds:

The Commission administers and holds trust funds on behalf of the Government of the United States of America. They are to be expended at the direction of the Government of the United States of America. These amounts have been excluded from the statements of financial position and statement of operations and fund balances of the Commission.

(d) Yukon River Fund:

Under the terms of an interim Yukon River Salmon Agreement in 1995, the United States and Canada established the Yukon River Salmon Restoration and Enhancement ("R&E") Fund and the Commission created an account to hold associated monies. The R&E Fund and its governing Yukon River Panel were finalized in the 2002 Yukon River Salmon Agreement and associated treaty amendments. The Commission Secretariat administers and holds R&E trust funds on behalf of the Yukon River Panel. The Yukon River Panel provides direction on how the monies are to be disbursed from the Fund. These amounts have been excluded from the statements of financial position and statement of operations and fund balances of the Commission.

During the fiscal year ended March 31, 2017, the Commission transferred \$503,509 (2016 - nil) to the Yukon River Fund, which represented all funds held in the Yukon River Legacy Fund. The Yukon River Legacy Fund has been dissolved as of March 31, 2017.

PACIFIC SALMON COMMISSION

Notes to Financial Statements

(Tabular amounts expressed in Canadian dollars, unless otherwise noted)

Year ended March 31, 2017

6. Trust funds (continued):

(d) Yukon River Fund (continued):

During the year, the R&E Fund paid \$89,146 (2016 - \$73,865) to the Commission for administrative services. As at March 31, 2017, the Commission had a receivable from the R&E Fund of \$7,435 (2016 - \$13,781) representing a reimbursement for expenses paid by the Commission on behalf of the R&E Fund.

(e) Summary of trust fund balances:

	Northern Fund	Southern Fund	Yukon River Fund	US Payroll Trust Funds	US Expenditure Trust Funds	Total 2017	Total 2016
Assets	\$ 155,953,790	\$ 128,623,159	\$ 1,056,568	\$ 384,636	\$ 717,449	\$ 286,735,602	\$ 265,465,023
Liabilities	\$ 117,562	\$ 322,701	\$ 17,971	\$ 384,636	\$ 717,449	\$ 1,560,319	\$ 1,415,267
Fund balances	155,836,228	128,300,458	1,038,597	-	-	285,175,283	264,049,756
	\$ 155,953,790	\$ 128,623,159	\$ 1,056,568	\$ 384,636	\$ 717,449	\$ 286,735,602	\$ 265,465,023
	Northern Fund	Southern Fund	Yukon River Fund	US Payroll Trust Funds	US Expenditure Trust Funds	Total 2017	Total 2016
Fund balance, beginning of year	\$ 145,138,466	\$ 118,063,488	\$ 847,802	\$ -	\$ -	\$ 264,049,756	\$ 271,289,932
Revenue	17,270,714	14,232,036	2,086,701	-	-	33,589,451	4,417,751
Expenses	6,572,954	3,995,064	1,895,906	-	-	12,463,924	11,657,927
	10,697,760	10,236,972	100,795	-	-	21,125,527	(7,240,176)
Fund balance, end of year	\$ 155,836,228	\$ 128,300,458	\$ 1,038,597	\$ -	\$ -	\$ 285,175,283	\$ 264,049,756
	Northern Fund	Southern Fund	Yukon River Fund	US Payroll Trust Funds	US Expenditure Trust Funds	Total 2017	Total 2016
Cash flow provided by (used in):							
Operations	\$ (2,298,360)	\$ (217,342)	\$ 161,734	\$ -	\$ -	\$ (2,293,961)	\$ (2,167,636)

7. Contractual obligations:

The Commission has entered into a number of project grant contracts as at March 31, 2017 for the future funding of research projects to be completed subsequent to the year-end.

These contractual obligations are funded in installments and payments are due based on conditions included in the contract being satisfied. As such, no liability has been accrued in the financial statements as the Commission is not liable until these conditions have been met.

As at March 31, 2017, the research project contractual obligations are \$216,220 (2016 - \$270,737).

PACIFIC SALMON COMMISSION

Notes to Financial Statements

(Tabular amounts expressed in Canadian dollars, unless otherwise noted)

Year ended March 31, 2017

8. Financial instruments:

(a) Credit risk:

Credit risk is the risk that a third party to a financial instrument might fail to meet its obligations under the terms of the financial instrument. For cash and accounts receivable, the Commission's credit risk is limited to the carrying value on the statement of financial position. Management does not believe that the Commission is subject to any significant concentration of credit risk.

(b) Liquidity risk:

Liquidity risk is the risk that an entity will not be able to meet its obligations associated with financial liabilities.

The Commission manages liquidity risk by maintaining adequate cash and available credit facilities with its banking provider. The Commission monitors the cash flow to ensure a sufficient continuity of funding from the Contracting Parties.

(c) Interest rate risk:

The Commission is not exposed to significant interest risk as it does not have amounts payable that are charged interest.

Appendices

Appendix A

Northern Fund Projects for 2016/2017

Projects funded by the Northern Fund Committee in 2016

Enhancement				
1	2016 Tatamien Lake Sockeye Fry Extended Rearing & Smolt Project	Mercer	B. Mercer & Assoc	TBR sockeye
2	Recovery Enhancement of Kibella-Chuckwalla Chinook	English	LGL	NBC chinook
3	Lakehe Sockeye Enhancement and Restoration Effectiveness Monitoring Program Year 1 of 3	Miller	DFO	NBC sockeye
4	Trapper Lake Sockeye Salmon Passage Improvement	Saloni	DFO	TBR sockeye
5	Trapper Lake Sockeye Enhancement/ Sockeye Access Improvement	Mercer	TTC Enhancement	TBR sockeye
6	Tuya Lake (Stikine) Enhancement Initiative Summary and Passage Investigation	Saloni	DFO	TBR sockeye
7	King Salmon Lake - Sockeye Smolt Survey	Erhardt	TRT FN	TBR sockeye
8	Sockeye Salmon Enhancement Workshop	Josephson & MacLaurin	ADFG & DFO	SEAK sockeye
Habitat				
9	Tahltan Lake sockeye access improvement	Erhardt	TAF	TBR sockeye
10	Sockeye Habitat Rehabilitation - Babine Lake	McIntyre	Lake Babine Nations Fisheries	NBC sockeye
11	Upper Bulkley River Sockeye and Chinook Habitat Restoration Feasibility Study	Miller	DFO	NBC sockeye chinook
12	Tahltan River Slide Remediation Investigation	Saloni	DFO	TBR sockeye chinook
13	Kutah Lake access improvement assessment	Erhardt	TRT FN	TBR sockeye
Information				
14	Forecasting Southeast Alaska pink salmon harvest from juvenile salmon data: extension of models	Orsi	NOAA	SEAK pink
15	Northern Boundary Area Sockeye Salmon GSI for 2016	Guyon	NOAA	SEAK sockeye
16	Stikine River Code Wire Tagging Augmentation, 2016	Boyce	DFO	TBR chinook coho
17	Genetic changes associated with in-basin supplementation of a population of sockeye; Phase 3	Joyce	NOAA	SEAK sockeye
18	Northern and Transboundary sockeye matched scale-tissue sampling	Reynolds	ADFG	SEAK sockeye
19	Genetic stock identification of District 10B and 10B sockeye, 2016	Gill-Baumer	ADFG	SEAK sockeye
20	Genetic stock identification of District 111 sockeye, 2016 - see above	Gill-Baumer	ADFG	SEAK sockeye
21	McLoughlin Creek Enhanced Chum Assessment	Willis (Larsen)	DFO (HFN)	NBC chum
22	Area 3 Wild Chum Assessment (Commercial fishery otoliths)	Cox-Rogers	DFO	NBC chum
23	Skeena Sockeye Lakes Juvenile Sockeye Hydroacoustic Surveys	Daire	SFC	NBC sockeye
24	Sockeye Smolt Enumeration at Babine Lake	McIntyre (Gottsfeld)	LBH (SFC)	NBC sockeye
25	Evaluation of New Approaches to Estimate Estival Chum Escapement	Hawrylyshyn	NCFNSC	NBC chum
26	Zymachord River Coho cwt Harvest Distributions	Anderson	NWES	NBC coho
27	Multi-species salmon assessment for the Wannock River	English	LGL	NBC sockeye chinook
28	Skeena River Recreational Chinook Creel Survey 2016	English	LGL	NBC chinook
29	Assessing fitness effects of sockeye supplementation in Auke Creek, AK	McPhee	UAF	SEAK sockeye
30	Alaska Department of Fish & Game Mark, Tag and Age Lab Support	Ozeman	ADFG	SEAK chinook coho
31	Northern Boundary area summer chum salmon monitoring	Proton	ADFG	SEAK chum
32	Mixed Stock Analysis of U.S. Districts 101, 102, and 103 Sockeye Seine Fisheries, 2015	Gill-Baumer	ADFG	SEAK sockeye
33	Central BC Chinook Mark Incidence and Catch Estimation Project 2015	Koroluk	DFO	NBC chinook
34	Annual run reconstruction Northern Boundary Area Sockeye	Cox-Rogers (Peacock)	DFO ADFG	SEAK sockeye
35	L. Trapper Sockeye and Kwakwaka-Tsatsa Chinook 2015-18	Boyce	DFO	TBR sockeye chinook
36	Nass Chinook Mark-Recapture Project 2016	Desson	NLG	NBC chinook
37	Tahltan Lake Smolt Enumeration and Sampling, 2016	Boyce	DFO	TBR sockeye
38	Transboundary Rivers Chinook Salmon Telemetry	Richards	ADFG	TBR chinook
39	Skeena Test Fishery DNA	Cox-Rogers	DFO	NBC sockeye
40	Monitoring occurrence and prevalence of Ich, Loma and IPNV in Skeena River sockeye stocks	Gottsfeld	DFO	NBC sockeye
41	Babine River sockeye migration and predation	McIntyre	Lake Babine Nation	NBC sockeye
42	Development of a high-resolution SNP baseline for stock identification of Coho Salmon	Beacham	DFO	NBC coho
43	North Coast (Areas 3 & 4) Creel Survey	Addison (Hawrylyshyn)	NCFNSC	NBC chinook coho
44	Alnarko River Chinook Escapement Estimation Project 2016	Koroluk	DFO	NBC chinook
45	Kwinamass and Khatamasteen Rivers chinook salmon escapement surveys 2016	Winther (Peacock)	DFO	NBC chinook
46	Northern BC coho cwt sampling net fisheries	Fraser	DFO	NBC coho
47	Chinook salmon Escapement Estimation to the Skeena River using Genetic techniques 2016	Winther	DFO	NBC chinook
48	Genetic Analyses of samples collected in the Recreational Chinook Fisheries in Northern BC 2016	Winther	DFO	NBC chinook
49	Genetic Stock Identification of Chinook salmon caught in Northern British Columbia Troll Fisheries 2016	Winther	DFO	NBC chinook
50	North Coast Net Fishery Catch Monitoring	Thorkelson	Area C (gillnet)	NBC sockeye
51	Skeena River CWT Equipment Procurement Project, 2016	Barnes	SFC	NBC coho
52	Babine Lake, BC - Sockeye Salmon nursery ecosystem structure, functioning and productive capacity: An integrated fisheries, limnological, and paleolimnological assessment	Selbie	DFO	NBC sockeye
53	Gilanyow (Kiwanga) Lake assessments, 2016	Cleveland	GFA	NBC sockeye
54	Kiwanga River Salmon Enumeration, 2016	Cleveland	GFA	NBC sockeye chinook coho pink
55	Nass Sockeye Fishwheel DNA Analyses Project (Year 1 of 3)	Desson	NLG	NBC sockeye
56	Nass Area Coastal Coho Escapement Project 2016 (Year 2)	Desson	NLG	NBC coho
57	Nass Area Coastal Chum Escapement Project 2016 (Year 3)	Desson	NLG	NBC chum
58	Taku River Coho Adult Augmentation 2016	Boyce Williams	DFO ADFG	TBR coho
59	Taku River Coho Salmon Smolt Tagging Augmentations	Boyce Williams	DFO ADFG	TBR coho
60	Taku Sockeye GSI 2016-18	Boyce	DFO	TBR sockeye
61	Nahlin Chinook Escapement Enumeration 2016-18	Boyce	DFO	TBR chinook
62	2016-18 Afsek Chinook Run Reconstruction Using GSI	Boyce	DFO	TBR chinook
63	2016-18 Afsek Sockeye Run Reconstruction Using GSI	Boyce	DFO	TBR sockeye
64	Stikine Chinook and Sockeye GSI 2016-18	Boyce	DFO	TBR sockeye chinook
65	Stikine Chinook Aerial Surveys 2016-18	Boyce	DFO	TBR chinook
66	Klukshu Chinook and Sockeye Escapement Enumeration 2016-18	Boyce	DFO	TBR sockeye chinook
67	Sampling to investigate Klukshu Early/Late population structure	Workman	Champagne & Aishihik FN	TBR sockeye
68	Sampling to investigate the juvenile distribution of lake-spawning and riverspawning Klukshu Sockeye	Workman	Champagne & Aishihik FN	TBR sockeye
69	Nahlin Creel Survey	Erhardt	TRT FN	TBR chinook
70	Little Tahltan River Chinook Assessment	Erhardt	TAF	TBR chinook

77	Boundary Area Coho Escapement	Shaul	ADFG	TBR	coho
78	Hugh Smith Lake Coho Smolt Estimation and Marking	Shaul	ADFG	SEAK	coho
79	Estimating the stock composition of Southeast Alaska Districts 108 and 111 Chinook salmon fisheries, 2016	Gilk-Baumer	ADFG	SEAK	chinook
80	Southeast Alaska Chinook Salmon Stock Assessment	Jones	ADFG	SEAK	chinook
81	SEAK Commercial Chinook Post Sampling	Reynolds	ADFG	SEAK	chinook
83	Current status of Radio Frequency Identification Tags and Applicability for PSC Management Regimes	Wertheimer	CSC	BC, OR	chinook coho
84	BC marine/tidal recreational fishery IREC survey development	Luedke	DFO	BC	chinook coho
85	Evaluation of population-specific behavioural impairment and mortality in Pacific salmon incidentally captured in marine commercial purse seine fisheries	Hinch	UBC	NBC	chum sockeye

Very High Priority Chinook projects

86	Abundance based estimates for Stillaguamish River chinook salmon using trans-generational genetic mark recapture	Small	WDFW	PS	chinook
87	Increased chinook salmon stock coded-wire tagging to improve the quality of chinook indicator stock analysis	Willis	DFO	GB	chinook
88	Terminal Abundance of WCVI Chinook Salmon	Dobson	DFO	WCVI	chinook
89	Canadian Mark Recovery Program CWT Sampling and Coordination & Mark Recovery Program Head Lab	Fraser	DFO	BC	chinook

Gitksan Watershed Authorities GFA
 Gitksan Watershed Authorities GWA
 Heiltsuk First Nation HFN
 Nisga'a Lisims Government NLG
 N. Coast - Skeena FN Stewardship Society NCSFNSS
 Northwest Watershed Enhancement Society NWES
 Skeena Fisheries Commission SFC
 Taku River Tlingit First Nation TRTFN
 Tahltan Fisheries TAF

Appendix B

Southern Fund Projects for 2016/2017

Projects funded by the Southern Fund Committee in 2016

Goal 1 - Improve the Management of Fisheries Relevant to the Pacific Salmon Treaty

1	Effects of early marine growth on adult Fraser sockeye salmon returns	Godbout	DFO	FR	sockeye
2	Increased CWT application in Southern B.C. coho indicator stocks	Willis	DFO	SoBC	coho
3	Improvements to describing and predicting en-route loss for Fraser sockeye salmon	Patterson	DFO	FR	sockeye
4	Exploitation rates estimation for Coho salmon in south coast marine fisheries using GSI	Candy	DFO	SoBC	coho
5	Adapting benchmarks of biological status to variability in exploitation history and persistent changes in productivity with a focus on data-limited Conservation Units	Holt	DFO	SoBC	sockeye pink chinook
6	Workshop to Investigate Alternative Management Scenarios for the PST Coho Management Regime	Hall	ESSA	PNW	coho
7	Improving Fraser River Test fisheries workshop and run-size estimates	Nener	DFO	FR	sockeye pink
8	Determination of reference points for status determination and associated allowable exploitation rates for Canadian Southern Coho Management Units (MUs)	Payne	DFO	SoBC	coho
9	Southern British Columbia and Puget Sound Chum mixed stock genetic identification for 2016-2019 fisheries: Year 5	Candy	DFO	SoBC	chum
10	Collection of local real-time tide and current data to explain variability in marine catch data and improve daily abundance and run size estimates of Fraser River Sockeye and Pink Salmon	Forrest	PSC	FR	sockeye pink
11	Automating procedures for forecasting of terminal run and escapement of Chinook, Coho and Chum	Espino/Ghemont	DFO	PNW	chinook coho chum
12	Development of a Robust Escapement Enumeration Strategy for Coho Salmon in the Lower Fraser Coho Management Unit	Bocking	LGL	FR	coho
13	Continuing the evaluation of abundance and stock composition of downstream migrating juvenile Sockeye Salmon in the lower Fraser River in 2016 (Year 5)	Tedey (Whitehouse)	DFO	FR	sockeye
14	Strait of Juan De Fuca Chum Salmon Sampling program	van Will	CTC	JDF	chum
15	Evaluation of an Adaptive Resolution Imaging Sonar (ARIS) for fish counting in the Lower Fraser River	Marlens	PSC	FR	sockeye
16	Coldwater River Adult Coho Enumeration	Wimbush	NTA	FR	chinook
17	Burnan River Chinook salmon mark-recapture 2016: Year 8	Dunlop	NTC	WCVI	chinook
18	Qualark Acoustics: estimating daily salmon passage in the Fraser River near Yale, BC in 2016	Whitehouse	DFO	FR	sockeye
19	Analysis of existing CPUE data from Canadian Commercial ITO fisheries for the purpose of the possible integration of this information into run-size models for Fraser River sockeye and pink salmon	Cave	Consultant	FR	sockeye pink
20	Evaluation and coordination of information useful for predicting en-route loss in Fraser sockeye	Patterson	DFO	FR	sockeye
21	Calibration of visually enumerated Fraser Sockeye spawning populations (Year 8)	Benner	DFO	FR	sockeye
22	Documentation of methods for the estimation of run-size of Fraser River sockeye and documentation of assessments of catchability in purse seine test fisheries	Cave	Consultant	FR	sockeye
23	Albion-based estimate of total Fraser River Chum Salmon escapement using GSI at Albion and estimate of Chilliwack River Chum Salmon escapement, 2016	Tedey	DFO	FR	chum

Goal 2 - Address Priority Stocks of Interest

24	South Fork Nooksack Chinook captive brood implementation	Eleazer	WDFW	PS	chinook
25	Cowichan juvenile Chinook habitat use assessment to direct lower river & estuary rehabilitation	Craig	BCCF	GB	chinook
26	Increased hatchery production and Coded Wire Tagging of Interior Fraser Coho	Willis	DFO	FR	coho

Goal 4 - Gain Better Understanding and Incorporate Ecosystem Factors into Underlying Science and Management Processes

27	Migration timing of juvenile Fraser River sockeye in Johnstone Strait	Trudel	DFO	GB	sockeye
28	Stock-specific variability in productivity as a function of juvenile fish condition and abundance in freshwater	Patterson	DFO	FR	sockeye

Very High Priority Chinook Projects

29	Abundance estimates for Stillaguamish River Chinook salmon using trans-generational genetic mark recapture	Small	WDFW	PS	chinook
30	Genetic-based abundance estimates for Snohomish River Chinook salmon	Seamons	WDFW	PS	chinook
31	Increased Chinook salmon stock coded-wire tagging to improve the quality of Chinook indicator stock analyses	Willis	DFO	GB	chinook
32	Canadian Mark Recovery Program CWT Sampling and Coordination & Mark Recovery Program Head Lab	Fraser	DFO	GB	chinook

Salish Sea Marine Survival Program

33	Salish Sea Marine Survival Program Year 3	Riddell	PSF	GB	chinook coho
34	Salish Sea Marine Survival Program Year 3	Schmidt	LLTK	PS	chinook coho

Appendix C

Appointment of Officers for 2016/2017

Effective December 1, 2016 a new slate of officers for the Pacific Salmon Commission was identified as follows:

<u>OFFICE</u>	<u>COUNTRY</u>	<u>REPRESENTATIVE</u>
Commission Chair	Can	Ms. Rebecca Reid
Commission Vice-Chair	U.S.	Mr. Charlie Swanton
Fraser River Panel Chair	Can	Ms. Jennifer Nener
Fraser River Panel Vice-Chair	U.S.	Ms. Lorraine Loomis
Northern Panel Chair	Can	Mr. Mel Kotyk
Northern Panel Vice-Chair	U.S.	Mr. Lowell Fair
Southern Panel Chair	Can	Mr. Andrew Thomson
Southern Panel Vice-Chair	U.S.	Ms. Laurie Peterson
Transboundary Panel Chair	Can	Mr. Steve Gotch
Transboundary Panel Vice-Chair	U.S.	Dr. John H. Clark
Stan. Comm. on F&A - Chair	Can	Ms. Bonnie Antcliffe
Stan. Comm. on F&A - Vice-Chair	U.S.	Mr. Ron Allen
Stan. Comm. on Scientific Cooperation - Chair	Can	Dr. Carmel Lowe
Stan. Comm. on Scientific Cooperation - Vice-Chair	U.S.	Mr. Alex Wertheimer
Technical Committee on Data Sharing - Co-Chair	Can	Ms. Kathryn Fraser
Technical Committee on Data Sharing - Co-Chair	U.S.	Mr. George Nandor
Fraser River Panel Technical Committee - Co-Chair	Can	Ms. Ann-Marie Huang
Fraser River Panel Technical Committee - Co-Chair	U.S.	Mr. Robert Conrad
Northern Boundary Technical Committee - Co-Chair	Can	Mr. Steve Cox-Rogers
Northern Boundary Technical Committee - Co-Chair	U.S.	Mr. Andrew Piston
Transboundary Technical Committee - Co-Chair	Can	Mr. Steve Smith
Transboundary Technical Committee - Co-Chair	U.S.	Mr. Ed Jones
Enhancement Subcommittee of the Transboundary Technical Committee - Co-Chair	Can	Mr. Corino Salomi
Enhancement Subcommittee of the Transboundary Technical Committee - Co-Chair	U.S.	Mr. Garold Pryor
Joint Chinook Interface Group Co-Chair	Can.	Mr. Paul Sprout
Joint Chinook Interface Group Co-Chair	U.S.	Mr. Phil Anderson
Joint Technical Committee on Chinook - Co-Chair	Can	Dr. Gayle Brown
Joint Technical Committee on Chinook - Co-Chair	U.S.	Mr. John Carlile
Joint Technical Committee on Coho - Co-Chair	Can	Dr. Arlene Tompkins
Joint Technical Committee on Coho - Co-Chair	U.S.	Dr. Gary Morishima
Joint Technical Committee on Chum - Co-Chair	Can	Mr. Pieter Van Will
Joint Technical Committee on Chum - Co-Chair	U.S.	Mr. Bill Patton
Joint Technical Committee on Habitat and Restoration Co-Chair	Can.	Vacant
Joint Technical Committee on Habitat and Restoration Co-Chair	U.S.	Mr. Thom Hooper
Selective Fishery Evaluation Committee - Co-Chair	Can	Dr. Rob Houtman
Selective Fishery Evaluation Committee - Co-Chair	U.S.	Dr. Gary Morishima

Appendix D

Approved Budget FY 2017/2018

PACIFIC SALMON COMMISSION

APPROVED BUDGET 2017/2018

	Budget 2017/18
1 INCOME	
A. Contribution from Canada	\$1,879,636
Special contribution pension CA	\$110,000
B. Contribution from U.S.	\$1,879,636
Special contribution pension U.S.	\$110,000
Sub total	\$3,979,272
C. Carry-over from previous fiscal year	\$938,988
D. Interest	\$22,000
E. Other income	\$175,000
F. Total Income	<u>\$5,115,260</u>
2 EXPENDITURES	
A. 1. Permanent Salaries and Benefits	\$2,680,973
2. Unfunded pension liability payments	\$240,162
3. Temporary Salaries and Benefits	\$267,004
4. Total Salaries and Benefits	\$3,188,139
B. Travel	\$117,307
C. Rents, Communications, Utilities	\$229,527
D. Printing and Publications	\$4,800
E. Contractual Services	\$775,180
F. Supplies and Materials	\$76,189
G. Equipment	\$223,000
H. Total Expenditures	<u>\$4,614,142</u>
3 BALANCE (DEFICIT)	<u>\$501,118</u>

Appendix E

Pacific Salmon Commission Secretariat Staff as of March 31, 2017

EXECUTIVE OFFICE

John Field
Executive Secretary

Teri Tarita
Records Administrator/Librarian

Kimberly Bartlett
Meeting Planner

Julie Ehrmantraut
Administrative Assistant

John Son
Information Technology Manager

FINANCE & ADMINISTRATION

Ilinca Manisali
Controller

Angus Mackay
Manager, Restoration & Enhancement Funds

Witty Lam
Senior Accountant

Victor Keong
Program Assistant, Restoration &
Enhancement Funds

Koey Lu
Accounting Assistant

Miki Shimomura
Administrative Assistant, Restoration &
Enhancement Funds

FISHERY MANAGEMENT

Mike Lapointe
Chief Biologist

Catherine Michielsens
Director, Modelling and Data Management

Catherine Ball
Scale Lab Technician

Merran Hague
Quantitative Fisheries Biologist

Keith Forrest
Manager, Test Fishing Operations

Fiona Martens
Director, Coordination and Stock Identification

Yunbo Xie
Hydroacoustics Scientist

Steve Latham
Manager, Stock Identification

Cory Lagasse
Manager, Hydroacoustic Operations

Erica Jenkins
Stock Identification Biologist

Jacqueline Nelitz
Hydroacoustic Technician

Maxine Forrest
Manager, Scale Lab

Mike Bartel-Sawatzky
Hydroacoustic Technician

Julie Sellars
Assistant Scale Analyst

Kent Collens
Database Manager (term)

Christina Perkin
Scale Lab Assistant

Appendix F

Membership Lists for Standing Committees, Panels, Joint Technical Committees and other Appointments as of March 31, 2017

1. STANDING COMMITTEE ON FINANCE AND ADMINISTRATION

Ms. Bonnie Antcliff (Chair)
Mr. Randy Atwal
Mr. Derek Mahoney
Ms. Rebecca Reid
Ms. Kirsten Ruecker

Mr. W. Ron Allen (Vice-Chair)
Ms. Alison Agness
Mr. William F. Auger
Ms. Natalie Howard
Ms. Christine Mallette
Mr. Mike Matylewich

Staff

Mr. John Field (ex. Officio)

Editorial Board

Ms. Kirsten Ruecker

Ms. Alison Agness

2. FRASER PANEL

Ms. Jennifer Nener (Chair)
Mr. Chris Ashton
Mr. Mike Griswold
Chief Ken Malloway
Mr. Rob Morley
Mr. John Murray

Ms. Lorraine Loomis (Vice-Chair)
Mr. James Dixon
Mr. Kirt Hughes
Mr. Robert F. Kehoe

FRASER RIVER PANEL - ALTERNATES

Mr. Les Jantz
Mr. Brent McCallum
Mr. Tony Roberts Jr.
Mr. Les Rombough
Mr. Peter Sakich
Mr. Marcel Shepert

Mr. Kyie Adicks
Mr. Ronald G. Charles
Mr. Jack R. Giard
Ms. Peggy Mundy

3. SOUTHERN PANEL

Mr. Andrew Thomson (Chair)
Dr. Don Hall
Mr. John Legate
Mr. Jeremy Maynard
Mr. Ryan McEachern
Mr. Laurie Milligan

Ms. Laurie Peterson (Vice-Chair)
Mr. Burnie Bohn
Mr. Jeromy Jording
Mr. Mark Newell
Mr. Joseph Oatman
Mr. Terry R. Williams

SOUTHERN PANEL - ALTERNATES

Mr. Rod Cootes
Ms. Brigid Payne
Mr. Michael Baird
Ms. Marilyn Murphy
Mr. Gordon Sterritt
Mr. Phil Young

Mr. Larry Carpenter
Ms. Denise Hawkins
Ms. Annette Hoffmann
Mr. Edward Johnstone
Mr. Chris Kern
Mr. Joseph C. Peters

4. NORTHERN PANEL

Mr. Mel Kotyk (Chair)
Mr. Chris Cue
Mr. Bill de Greef
Mr. Seigi Kriegl
Mr. Tom Protheroe
Ms. Joy Thorkelson

Mr. Lowell Fair (Vice-Chair)
Mr. Clay Bezenek
Mr. Dennis Longstreth
Mr. Robert D. Mccum
Mr. Tom Ohaus
Mr. Robert M. Thorstenson

NORTHERN PANEL - ALTERNATES

Mr. Stuart Barnes
Mr. Ronald (George) Cuthbert
Ms. Sandra Davies
Mr. Rick Haugan
Mr. Greg Knox
Chief Harry Nyce Sr.

Mr. John Carle
Mr. Brennon Eagle
Mr. Mitchell Eide
Mr. Tom Fisher
Dr. Peter Hagen
Mr. Andrew Piston

5. TRANSBOUNDARY PANEL

Mr. Steve Gotch (Chair)
Mr. Keith Carlick
Mr. Richard Erhardt
Ms. Cheri Frocklage
Ms. Jennifer Gould
Mr. Chris Kendel
Mr. Wolfe Riedl
Ms. Linaya Workman

Dr. John H. Clark (Vice-Chair)
Mr. Brennon Eagle
Mr. Arnold Enge
Mr. Gary Gray
Dr. Peter Hagen
Mr. Russell Thomas
Ms. Dale A. Kelley

6. STANDING COMMITTEE ON SCIENTIFIC COOPERATION

Dr. Carmel Lowe (Chair)
Mr. Mark Saunders

Mr. Alex C. Wertheimer (Vice-Chair)
Dr. Jeffrey J. Hard

7. NORTHERN FUND COMMITTEE

Mr. Steve Gotch (Co-Chair)
Mr. John McCulloch
Dr. Carmel Lowe

Mr. Charles Swanton (Co-Chair)
Mr. William F. Auger
Mr. Robert D. Mecum

8. SOUTHERN FUND COMMITTEE

Mr. Andrew Thomson (Co-Chair)
Mr. Mike Griswold
Dr. Don Hall

Mr. Larry Peck (Co-Chair)
Mr. Peter Dygert
Mr. Joseph Oatman

9. JOINT TECHNICAL COMMITTEE ON CHINOOK

Dr. Gayle Brown (Co-Chair)
Mr. Richard Bailey
Ms. Sabrina Crowley
Ms. Diana Dobson
Ms. Dawn Lewis
Ms. Elinor McGrath
Mr. Chuck Parken
Dr. Teresa Ryan
Dr. Antonio Velez-Espino
Mr. Ivan Winther

Mr. John Carlile (Co-Chair)
Dr. Marianna Alexandersdottir
Mr. Jonathan Carey
Dr. John H. Clark
Mr. Robert Clark
Mr. Ethan Clemons
Mr. Tim Dalton
Mr. Brian Elliott
Ms. Danielle Evenson
Mr. Gary R. Freitag
Mr. Tommy Garrison
Mr. Andrew Gray
Mr. Steve Haeseker
Mr. Grant Hagerman
Mr. Edgar Jones
Dr. Robert Kope
Mr. Larrie LaVoy
Ms. Marianne McClure
Dr. Gary S. Morishima
Mr. Randy Peterson
Ms. Anne Reynolds
Dr. Kristen Ryding
Mr. Rishi Sharma
Mr. William Templin

10. JOINT TECHNICAL COMMITTEE ON COHO

Dr. Arlene Tompkins (Co-Chair)
Mr. Roger Dunlop
Mr. Nick Komick
Mr. Peter Nicklin
Ms. Lynda Ritchie
Mr. Joel Sawada

Dr. Gary S. Morishima (Co-Chair)
Ms. Carrie Cook-Tabor
Ms. Angelika Hagen-Breaux
Mr. Craig Foster
Mr. Jeff Haymes
Dr. Diego Holmgren
Mr. Andy Rankis
Dr. Laurie Weitkamp
Ms. Mara Zimmerman

(Northern Coho)

Dr. John H. Clark
Ms. Michele Masuda
Mr. Leon D. Shaul

11. JOINT TECHNICAL COMMITTEE ON CHUM

Mr. Pieter Van Will (Co-Chair)
Mr. John R. Candy
Ms. Kim Charlie
Ms. Marla Maxwell
Mr. Joe Tadey

Mr. Bill Patton (Co-Chair)
Mr. Scott Bass
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Mr. Ben Starkhouse
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12. TECHNICAL COMMITTEE ON DATA SHARING

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Mr. Nicholas Komick
Ms. Cheryl Lynch

Mr. George Nandor (Co-Chair)
Mr. P. Brodie Cox
Mr. Tim Frawley
Mr. Mike Matylewich
Dr. Gary S. Morishima
Ms. Amy Seiders

Working Group on Data Standards

Ms. Kathryn Fraser
Mr. Nicholas Komick
Ms. Brenda Ridgway

Mr. Timothy Frawley
Mr. Gabriel T. Garza
Mr. Gilbert Lensegrav
Mr. George Nandor
Mr. Ken Phillipson

13. FRASER RIVER PANEL TECHNICAL COMMITTEE

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Mr. Ron Goruk
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Mr. Robert Clark
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Mr. Scott Forbes
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17. JOINT CHINOOK INTERFACE GROUP

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Dr. Brian E. Riddell

Mr. Charles Swanton (Co-Chair)
Mr. Phil Anderson
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18. NATIONAL CORRESPONDENTS

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Ms. Alison Agness